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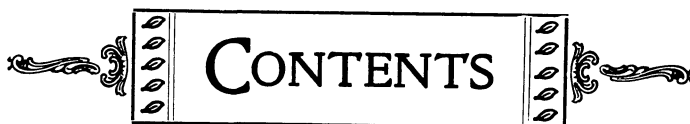
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## **The Shell or Telescope Crown.\***

By HART J. GOSLEE, D.D.S., Chicago, Ill.

### VII.

*(Continued from December, 1901.)*

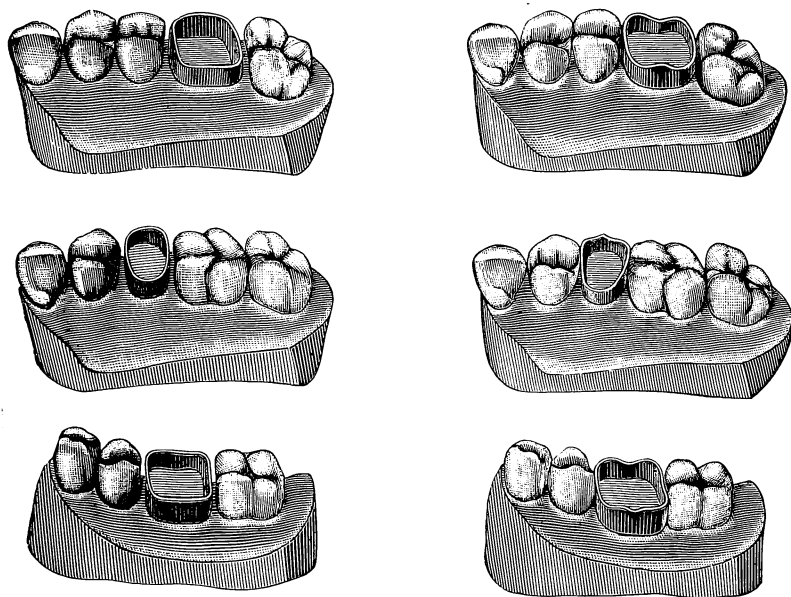
Indications, Contraindications. Requirements: Telescoping Portion, Occlusal End. Methods: Sectional Method, Procedure; Measurement. Bands; Width, Length, Soldering, Fitting, Contouring, Occluding Bite, Impression. Articulators. Processes for Cusp Formation. Carved Cusp and Special Die Methods. Procedure; Swaged Cusps, Mould, Dies, Swaging, Adjusting Cusp, Soldering Cusp, Finishing. Solid Cast Cusps. Cusp Formation without Models. Use of Ash's Crown Swaging Device. Die and Die-Plate Methods; Individual Dies, Die-Plates; Application, Adjusting With Models, Adjusting Without Models. Hollingsworth System; Application. Millett's System; Application. Lowry System; Application. Baird System; Application.

The average and typical requirements, and the results possible from a knowledge of the form and outline of the teeth, and a skilful manipulation of the pliers, are indicated before and after contouring the band in Fig. 66.

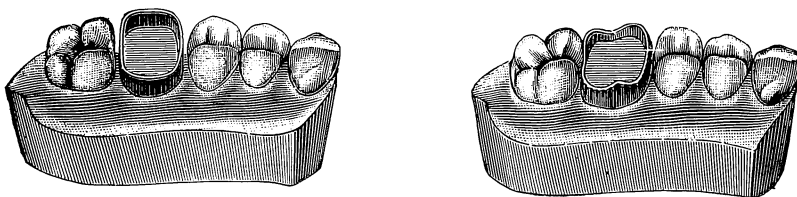
In instances where the diameter of the root after its preparation is larger than the proportionate dimensions of the occlusal surface, to secure a symmetrical alignment with the adjacent teeth, it may become necessary to reduce the circumference of the occlusal edge of the band. This may be quite easily accomplished by cutting numerous slits around

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the approximal and lingual surfaces of the occlusal edge, and then drawing the points in and overlapping them until the circumference is sufficiently reduced. (Fig. 67.) These places may be afterwards filled in with solder until a smooth uninterrupted surface presents. Although the



*Fig. 66.*



*Fig. 67.*

pliers previously mentioned may be used successfully, a very convenient form especially adapted to this purpose, and generally useful in reducing the size of either end of the band, when occasion requires, is illustrated in Fig. 68.

After securing the proper and desired contour, this edge should be



filed smooth and even, the band then finally adjusted to the root, and the occluding bite and impression taken.

The interior of the band should be filled even with the edge with wax previous to taking the occluding bite. This facilitates the removal of the latter from the mouth and its final adjustment to the model.

The occluding bite should always be taken separately from the impression, and should *precede* it, because the imprint of the band is necessary to admit of its adjustment to the model with the band in place. Wax is preferable for this purpose, because of the ease with which the relation and a good imprint of the teeth may be secured, and of its more easy and accurate adjustment to the model.

In obtaining it enough wax should be used to secure the imprint of at least two teeth on each side of the crown, and in the procedure it should be definitely ascertained that the teeth are in *direct* and *proper occlusion*.

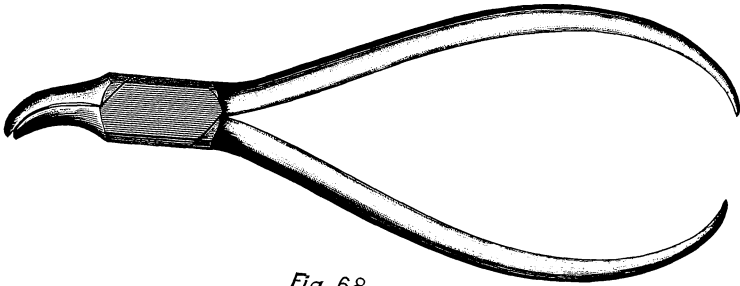
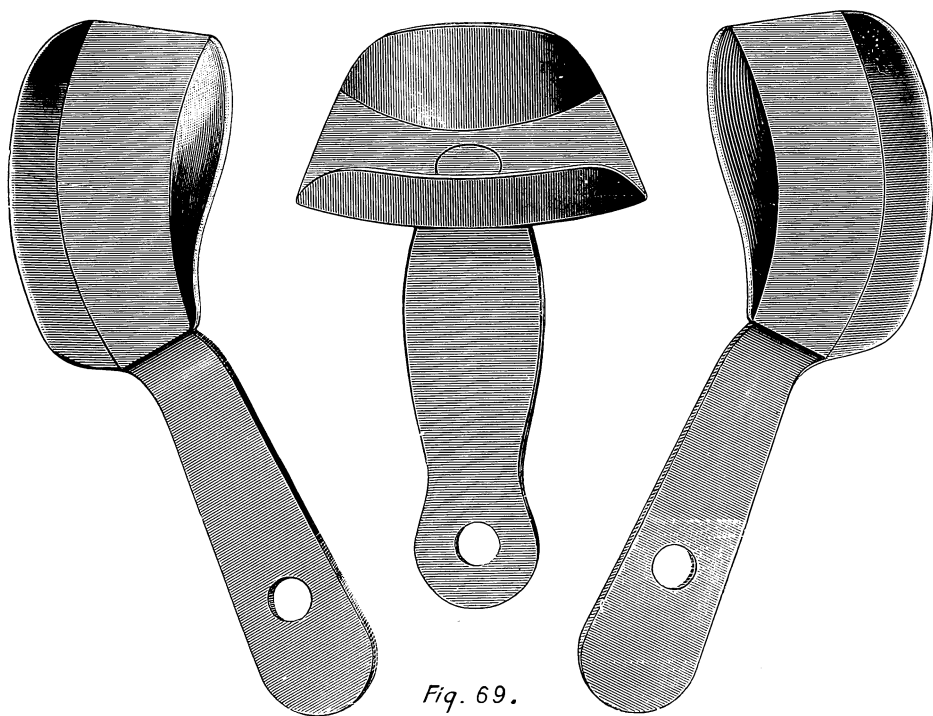


Fig. 68.

The patient should then be instructed to sustain a firm closure of the jaw, and press the wax against the lingual surfaces of the teeth with the tongue, when by compressing it closely to the buccal surfaces with the fingers a correct and well-defined bite is readily obtained.

The impression should *always* be taken with plaster, and, corresponding with the bite, should include two or more adjacent teeth, when present, on each side of the crown. This is necessary in order to prove and govern the occlusion when mounted upon the articulator. The use of plaster is essential for this purpose, because of the difficulty of, and uncertainty in readjusting the band to its accurate position in the impression, when any material is used which *draws* perceptibly in removing from the mouth. This may be done with a degree of absolute certainty when plaster is used.

Partial impression trays of convenient size for this purpose are illustrated in Fig. 69, two being adapted for the right and left sides, and one for universal use; the latter, of course, is the most generally useful. Because of the natural shape of the teeth, it will usually be found necessary to break the impression in removing it from the mouth, which is not objectionable if the parts are afterward accurately replaced. A



*Fig. 69.*

convenient tray, recently designed by Dr. E. L. Townsend to facilitate such procedure, includes a separable base composed of two smaller trays with the dividing line in the center. Upon the removal of the outer tray these remain in place, when they may be easily divided by the insertion of the blade of a small penknife, which separates the impression in two lateral halves. (Fig. 70.)

When the parts are accurately readjusted and their relation securely sustained with melted wax, the impression should be then varnished, filled, separated, the bite adjusted, and then mounted securely upon the articulator. For the purpose of facilitating the separation of the model from the impression, the latter should be first coated with a *thin* solution of shellac in alcohol, and followed, after drying, with a coating of very thin sandarac, in alcohol. The former causes a line of demarcation of inestimable value in separating, and the latter gives a smooth, hard surface to the model.

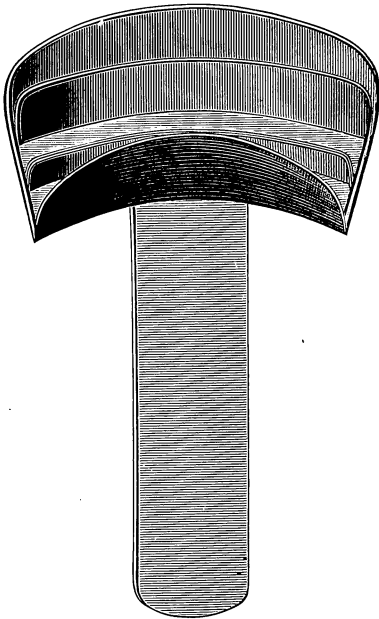


Fig. 70.

Because of  
**Articulators.** the desirability

of obtaining a degree of accuracy in articulation as well as occlusion, a reproduction of the lateral movements of the jaw, such as are made possible by the use of an anatomical articulator, is almost as essential in crown work, and equally so in bridge work, as

it is in the construction of artificial dentures.

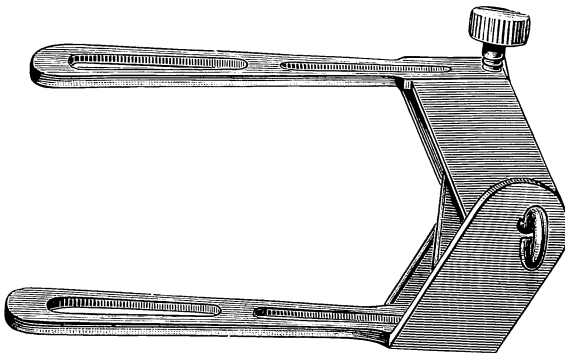


Fig. 71.

For single crowns, however, such requirements, while desirable, are not so necessary, and since we have no design conveniently adequate for the purpose, the ordinary crown articulator may answer. (Fig. 71.)

## Processes for Cusp Formation.

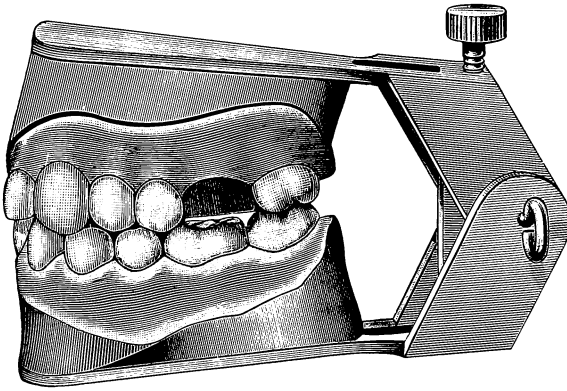
Of the various methods and systems for securing suitable cusp forms that will typify the natural tooth, and meet the requirements of articulation and occlusion, but one general line of procedure offers absolute certainty and accuracy in all cases.

The importance of true occlusion, as has been previously emphasized, will be readily apparent, and is generally conceded, and yet throughout the entire evolution of methods for procuring it, a system of stereotyped typical dies has predominated. As the conditions presenting vary in proportion to the degree of the normal accuracy of occlusion, position of the root, and its relation to adjacent teeth, and the length and shape of band and depth of cusp required, the fallacy of expecting a ready-made form to closely fit and approximate the edge of a properly contoured band, and then articulate and occlude accurately with the opposing teeth, is manifest.

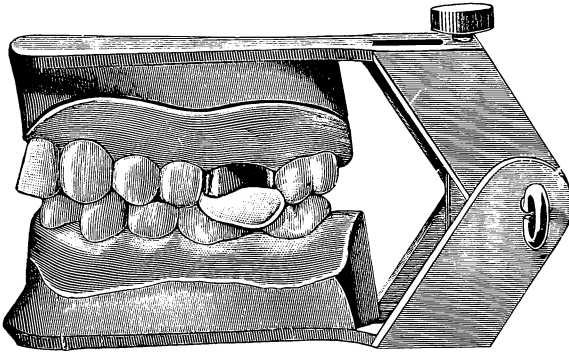
### Carved Cusp and Special Die Methods.

If these mechanical and artistic requirements are to be observed, the prerequisites of certainty and accuracy can be best obtained by forming the cusp directly from an imprint of the opposing teeth, and in its proper relation to the band, as was originally suggested in primitive form by Dr. Norman W. Kingsley. While the detail of such a procedure may probably consume a little more time than some methods, *time* is not the only factor to be considered, except perhaps by *dental laboratories*; and the results will usually justify such an expenditure.

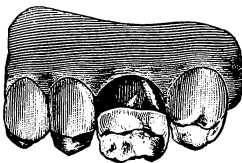
When the models have been securely mounted  
**Procedure.** upon the articulator (Fig. 72), all surfaces of the plaster in close proximity to the band should be varnished with a *thin* coating of collodion, sandarac or silex. The band should be filled with thin, well mixed plaster, into which the occlusal surfaces of the opposing teeth are then imprinted by firmly closing the articulator. (Fig. 73.) The reproduction of adjacent teeth in the model serves to sustain and prove the proper occlusion. When this has become sufficiently crystallized, the articulator should be opened, and the band, with its plaster contents, detached from the model in such manner as to preserve its definite outline and relation. The surplus plaster around the outer edge of the band should be removed with the sharp blade of a small penknife, which leaves the remaining contents somewhat crude and inartistic in outline, but accurate in occlusion. (Fig. 74.) An artistic effect, in proportion to the degree of skill possessed by the operator, may be obtained by inserting the grooves and pits of the typical outline



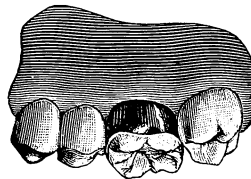
*Fig. 72.*



*Fig. 73.*



*Fig. 74.*



*Fig. 75.*

of the tooth, which may be done without perceptible change to the occlusion. In fact, the latter is thus improved because of the formation and separation of the cusps. (Fig. 75.)

While modeling compound, mouldine and wax are sometimes employed for the formation of cusps, the use of any of them is not so reliable as plaster, because of the tendency to flake in carving, or of the susceptibility to change form in the subsequent process of securing the mould for the die, or for casting. In the process of carving, it is not altogether necessary that the *correct anatomical* outline of the tooth should be reproduced, but only to typify it sufficiently to designate the tooth it represents. This may be easily accomplished by inserting the grooves *deep* enough to separate the cusps, and typical enough in outline to distinguish the *right* from the *left*, and the *upper* from the *lower*. (Fig. 76.)

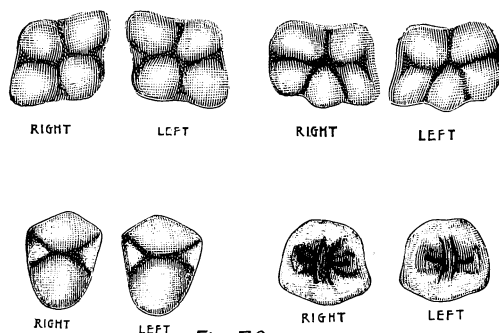


Fig. 76.

In the reproduction of the plaster cusp in gold, two methods of procedure are employed, by means of which plate gold may be conformed by swaging between dies, or a solid cusp produced by casting.

**Swaged Cusps.** Because of the possibilities for securing a more distinct and definite reproduction of the outline; of the time saved in adjusting and adapting the cusp to the band, and of securing adequate thickness of cusp by subsequent reinforcement with solder, the swaged method is usually preferable.

For this procedure the *plaster cusp* should be trimmed away uniformly around its peripheral border, until the edge of the band is exposed. This reduction in size allows for the thickness of gold forming the cusp, and renders possible a *perfect approximation* of the edges of cusp and band.

If not observed, the cusp will be as much larger than the band as its thickness, which will require the use of solder in securing a smooth surface in its subsequent attachment.

**Mould.**

A moulding ring (Fig. 77) should be filled even and flush to its edges with mouldine, into the center of one surface of which the plaster cusp, after being dusted with lycopodium or soapstone, should be firmly imprinted *just deep enough* to secure the outline of the exposed edge of the band. The mouldine should be packed closely against the band around its circumference, and the band and plaster cusp removed from the

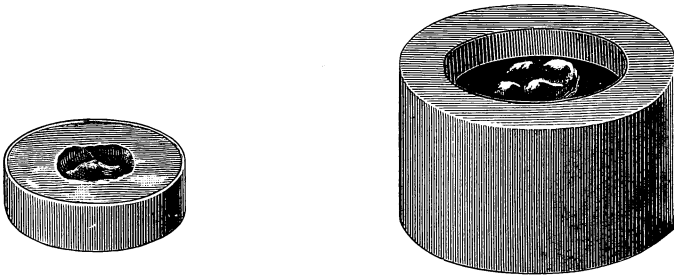
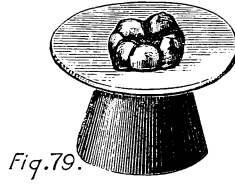
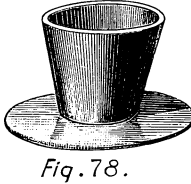
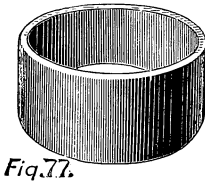


Fig. 80.

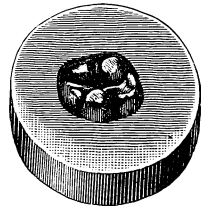
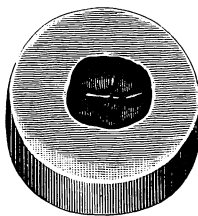
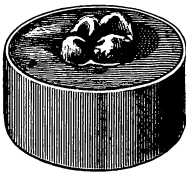


Fig. 81.

Fig. 82.

mould. This should be dusted with lycopodium and the dies secured.

**Dies.**

The most useful and convenient system of dies may be secured by placing a casting cup (Fig. 78), which has a small perforation through the center of the base, over the mould, and casting a cusp-button of pure tin or Watt's metal (Fig. 79). After cooling, the button should be detached from the cup with a small knife-blade, and placed upon a smooth surface of mould-

ine, in the moulding ring, then dusted freely with lycopodium, and the rubber ring adjusted for the purpose of securing the counter-die (Fig. 80), which is poured with fusible alloy.

A higher fusing metal than any of the fusible alloys is necessary for casting the cusp-button in order to preclude the probability of melting it in securing the counter-die.

In the process of forming the cusp with these dies (Fig. 81), the swaging should be done in the counter-die by the use of an ingot of lead, or a large buckshot, until closely adapted, after which the surplus gold should be cut away and the cusp-button used for the final swaging only, to bring out the finer lines. These cusp-buttons may be preserved and found useful wherever occasion admits of the use of ordinary and typical dies, such, for instance, as the absence of occluding and adjacent teeth.

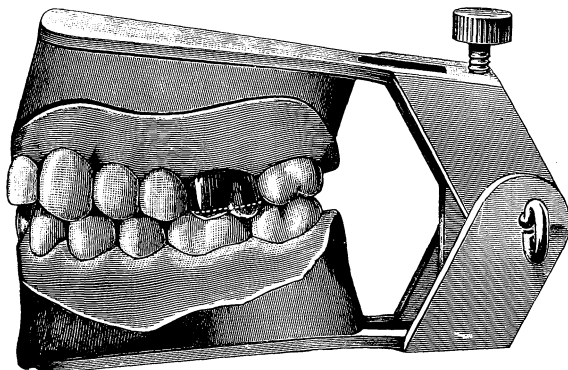


Fig. 83.

Another method somewhat more simple is to secure the mould as indicated, and then adjust the rubber ring and pour the die of fusible alloy. The surface is then dusted with lycopodium or coated with a solution of whiting in alcohol, the rubber ring readjusted, and a counter-die of the same metal and dimensions secured. (Fig. 82.)

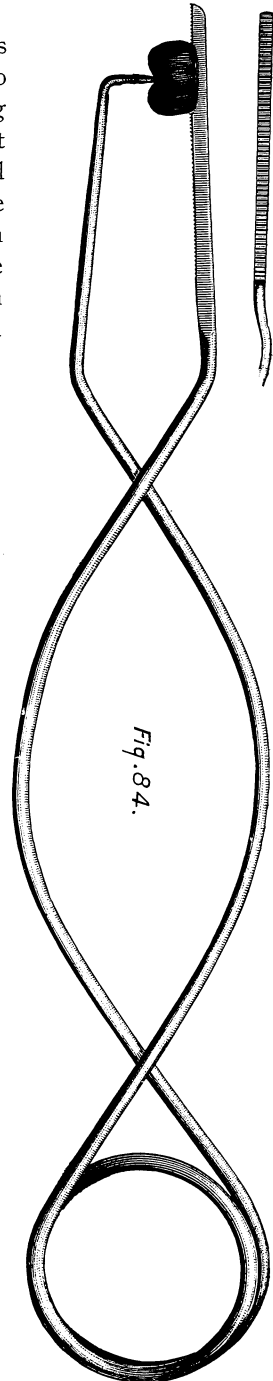
While this will answer the purpose, if the swaging is done in similar manner, the tendency of stretching and probability of tearing the gold will be increased, especially if the cusp is very deep, because of the difficulty of swaging and conforming gold, or any metal, to any given or desired shape between two surfaces of like and equal resistance, in which respect lies the advantage of the former method.

In the process of swaging, the surfaces of the dies  
**Swaging.** should be *oiled* to facilitate the procedure, and prevent sticking. A convenient method of preventing the defacing of the gold is to stretch a piece of rubber dam over it before



driving into the counter die. This also avoids any coating of the die metal from adhering to the surface of the gold. The chances of tearing the gold may be reduced to a minimum by first swaging over the die with heavy tinfoil covered by the rubber dam. This slightly compresses the metals and affords space for the gold between the two surfaces of the dies. It should then be carefully worked down into the counter die with a small blunt-pointed piece of wood. The gold used should be of the same karat and color as the band, and of 28 gauge thickness, as it is to be subjected to considerable stretching. It should be cut somewhat larger than the diameter of the cusp to be formed, and frequently annealed during the process; and a round or disk-shaped piece of plate will yield more readily to the desired conformation between the dies, with less tendency to overlap at the angles; and all unnecessary surplus should be removed *before* the final swaging. Steady and uniform pressure, such as would result from the use of a press of adequate power, would be productive of better results, in the absence of which a *heavy* hammer and direct blow will answer.

When the swaging has been completed, the edge of cusp should be carefully trimmed down to the line marking its point of contact with the band, which should be outlined in the gold. This point can be approached with small curved crown shears, but the final trimming should be done with a fine flat-surface gold file, and may be best and more uniformly accomplished by holding the file steady and carrying the cusp backward and forward over its surface. The plaster cusp should then be removed from the band, and the latter adjusted to place on the articulator. After filling the interior of the band with wax to sustain the cusp, it should be consecutively trimmed and tried to place until the



edges approximate evenly, and the desired occlusion is obtained and *proven* by the firm closure of the articulator. (Fig. 83.)

The necessary re-enforcement of the cusp to  
**Soldering Cusp.** fortify it against constant and continued attrition, may be done with solder simultaneously with its attachment to the band, although no objection is offered to filling the cusp with solder previous to its subsequent attachment if done with the same karat that would be indicated and used in the joint. During the process of soldering, the relation between cusp and band should be securely sustained. This can be best accomplished by the use of automatic pliers designed for the purpose as indicated in Fig. 84, the use of wire being objectionable for the same reasons previously mentioned in connection with soldering the band.

The parts should be treated to the acid bath, freely washed with water,

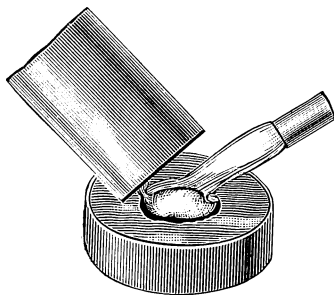


Fig. 85.

and adjusted in the pliers. Flux should then be applied to the joint and fused, and the parts united with 22 or 20 karat solder. The necessary re-enforcement may be obtained with 18 karat solder. In case of a perforation of the gold as a result of swaging, the same should be first filled with foil, when no trouble will be experienced in covering it over or filling it in with solder.

When the soldering has been completed, the  
**Finishing.** crown should be again treated to the acid bath to dissolve remaining borax, then dressed down with carborundum stones and disks in the engine, and finally polished on the lathe.

While no special or particular advantage is afforded by the formation of a solid or cast cusp, excepting that the presentation of a faulty or inaccurate occlusion may be remedied by grinding freely without exposing the

solder, yet many prefer to pursue this method. When such procedure seems desirable, the plaster cusp, after carving, should be left *flush* and *continuous* with the *outside* edge of the band.

The moulding ring should be filled with mouldine, and the mould of the cusp secured on a line with the edge of the band. This should then be placed over the Bunsen burner and allowed to remain until the mouldine becomes hard. Asbestos of adequate thickness to accommodate the depth of the cusp may also be used for the mould by saturating it with water until a suitable imprint of the plaster cusp can be made in it, after which it should be dried in the same manner. Scrap gold of sufficient quantity, sparingly fluxed, should be fused in the mould, and, when molten, may be easily cast by quickly pressing it into the matrix with a smooth surface of carbon or steel large enough to cover the entire area of the cusp. (Fig. 85.) The principal objection offered to this method is the time ordinarily required to trim and file the surface until a perfect approximation with the band, and the necessary requirements of occlusion are obtained.



Fig. 86.

### Cusp Formation without Models.

The same detail of procedure is applicable to the formation of cusps without the use of models or articulator. The results, however, while perhaps occasionally as artistic, are not so accurate, because no guide for obtaining the correct length of cusps is present, and no opportunity is afforded for *proving* the articulation and occlusion in the final adjustment and attachment of the cusps to the band, unless it be done directly in the mouth.

When the employment of such a procedure may seem indicated, or when it may be desirable or necessary to complete the crown at a single sitting, the band in position on the root may be filled with a sufficient quantity of plaster, in the plastic state, or with modeling compound, and the teeth closed directly into it. After thoroughly hardening it should be removed, the surplus trimmed away even with the band, and the desired and typical shape and form then given it by carving, as is consecutively illustrated in Fig. 86, when the dies or mould may be obtained in the manner outlined, and the crown finished, as indicated.

**Ash's Crown Swaging Device.**

Ash's crown swaging device, which consists of a cylinder and plunger, and a *soft* rubber or hydraulic pad, will be found quite useful for swaged cusps, because of eliminating the necessity for the use of any counter-die, or of swaging between two surfaces of metal, and, by preventing any rebound, displacement or defacing of the gold during the process.

In its use the mould from which the die is secured must be obtained in a moulding ring of suitable dimensions, to render it of a size corresponding to the interior diameter of the cylinder.

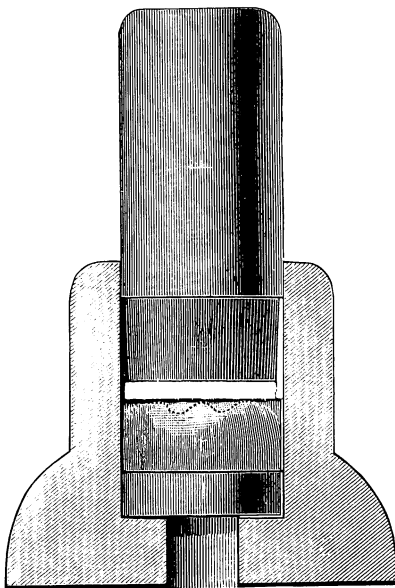


Fig. 87.

When the die has been secured with fusible alloy it should be placed in the cylinder, the gold annealed and placed in position, and the soft rubber or hydraulic pad then inserted.

The plunger is then adjusted, and, upon being driven into the cylinder, results in the swaging being easily and quickly accomplished, without danger of tearing or defacing the gold.

If the cusp-button method of dies has been employed, and the button afterward used only to bring out the finer and more definite lines, the swaging may be done in the counter die in the same manner (Fig. 87).

### Die and Die-Plate Methods.

The advent of the die and the die-plate systems was, primarily, the outcome of a desire for obtaining more natural and artistic results in the process of cusp-formation than was then possible by pursuing the primitive method. Originally, efforts in this line were confined to soldering a flat surface of gold to the band, and then building the cusps at various points upon this surface with small globules of scrap gold, or pieces of triangular platino-iridium wire, attached with solder; or with solder alone, and subsequently grinding to the desired form and occlusion.

While many of these somewhat crude, inaccurate and inartistic efforts were successful from the standpoint of serviceability and usefulness, the introduction of dies soon followed. These were designed to serve as a means of securing more artistic results, and as a time-saving procedure.

The first productions in this line were individual dies, obtained directly from the natural teeth. For this purpose suitable extracted teeth were selected, and mounted in a base of plaster. This was then trimmed to favorable shape for securing a mould in sand, from which a casting was made of zinc.

Plate gold was then swaged to conform with the outlines of the natural cusps by driving the die into a smooth surface of lead, or an old discarded counter-die.

This method was productive of so great a degree of improvement over the former procedure as to subsequently induce the supply-houses to manufacture these dies in sets of various numbers, and made of brass in order to be more permanent and indestructible (Fig. 88).

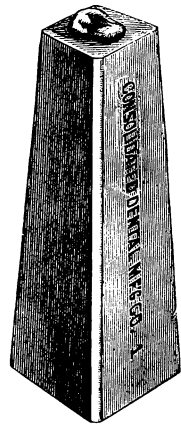


Fig. 88.

Because of the immediate necessity for a suitable counter-die, and of the advantage of combining a larger variety of cusp-forms into more convenient and compact order, the introduction of the die-plate was a natural sequence.

These comprise various numbers of cusp-moulds in a *brass* casting. In their use the swaging is easily and quickly accomplished by driving the gold into the mould selected to best approach the requirements, with an ingot of lead or alloy of lead and tin. Ingots for the purpose may be previously cast in any quantity, and of adequate and convenient sizes by the use of a *hub-mould* designed for, and usually accom-

panying, the die-plate (Fig. 89). Ordinary buckshot, however, are easy to procure, and, if of suitable size, will answer the purpose nicely.

While these plates are still in common use their value and range of application increases in proportion to the number and variety of cusp-forms contained, and their limitations, of course, decrease in inverse ratio.

**Application.** In their use the mould should be selected which best represents the individual tooth to be crowned, and meets or approaches the size of the band. The requirements of occlusion must be secured in the fitting and adjustment of the cusps to the band, which can only be observed, of course, after swaging the cusps.

**Adjusting with Models.** With cusps formed by *any* die-plate system or method the best and most accurate relation can be secured with models mounted upon the articulator. Opportunity is thus afforded for trimming the band or the cusps, until their approximation admits of a favorable occlusion, which can be noted upon the lingual as well as the buccal surfaces.

More perfect occlusion may often be obtained by depressing the cusps with a blunt instrument, or piece of wood; or, if necessary, by

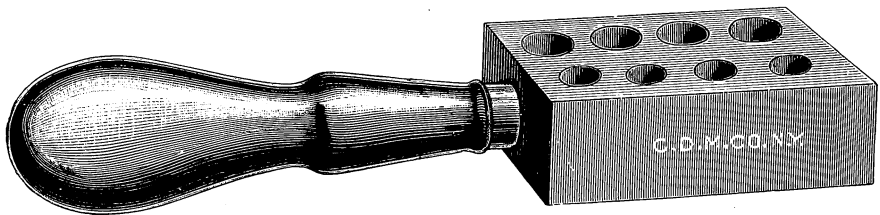


Fig. 89.

building up, wherever indicated, with a *high grade* of solder. Small globules of scrap gold or pieces of gold or platinum wire facilitate such procedure by affording a guide as to the desired formation and location, and by requiring the control of less solder in their attachment.

When the requirements of occlusion have been thus observed, an effort should be made to closely approximate the edges of cusps and band. This may be done by adjusting the one to the other with pliers, if care be exercised so as not to distort the shape of the band and destroy its contact and alignment. Any necessary filling in or subsequent contouring may be done with solder in the final attachment. Where a considerable space exists between the two portions, the process of soldering

is facilitated by burnishing a piece of thin pure gold plate, or packing foil gold into such spaces.

**Adjusting without Models.** In emergencies, or where it may seem desirable to complete the crown without models, and secure the adjustment in the mouth, the fitting may be facilitated by filling the interior of the band with wax to temporarily sustain the cusps during the process. When the parts have been approximated, a more perfect occlusion may often be obtained by tacking the cusps to the band at one point with a very small bit of solder, and then replacing the crown and having the opposing teeth closed firmly into it, after which the soldering may be completed, and the necessary reinforcement given. If the requirements are particularly difficult, the process may be further facilitated by swaging the cusps of 30 gauge pure gold. This is so much more yielding and will offer so little resistance to the closure of the teeth into firm occlusion, as to insure moderately accurate results, but such cusps should be attached with a very high grade of solder, as the extreme softness of the gold will soon result in its exposure. This procedure is equally applicable, of course, to the adjustment of cusps formed by any system or method employed.

### **Hollingsworth System.**

The great variation in the size, shape and depth of cusps necessary to meet or approach the requirements of this style of crown construction, and the previous absence of any system, or definite detail in the work, resulted in the introduction of the Hollingsworth System, devised by Dr. J. G. Hollingsworth.

This was the first system embracing a detailed line of procedure in the construction of gold crowns, and because of including a large variety and selection of typical forms, of its simplicity, and of being so great an improvement over former methods, it is much used.

It comprises about two hundred typical occlusal forms in the shape of cusp-buttons, and a good selection of moulds of the buccal surfaces of bicuspid and molars, and of the labial and lingual surfaces of the anterior teeth.

Those for the buccal surfaces of bicuspid and molars are designed for the purpose of securing a more artistic shape in these surfaces of the band by swaging, or for gold reproductions of the entire tooth. For the former purpose, however, such procedure by any system is unnecessary, because of the time consumed, and of the possibilities for otherwise, and more quickly securing a proper and equally artistic shape. While such moulds may often be found useful for obtaining all gold dummies for

bridge construction, those for the anterior teeth are practically useless, because of the limited indications for the application of such crowns.

The variety, form and convenient shape of the cusp-buttons, however, affords for them a more or less extensive range of application and usefulness. They are made of a metal which is moderately indestructible, and are used only for the purpose of forming the die for the subsequent conformation of the gold by swaging, or for securing the mould in asbestos for the purpose of obtaining solid cast cusps, as previously indicated.

The convenient size of the cusp-buttons possesses the advantage of facilitating the selection of the one most favorable to meet the requirements, which may be accomplished by trying to place upon the band, on the articulator, or in the mouth.

Aside from the forms, the system consists of a steel moulding plate and suitable rubber moulding rings.

When the cusp-button which *best* represents the tooth, and meets the requirements of occlusion and approximation with the edge of band, has been selected, it should be deposited upon the moulding plate, and the rubber ring placed around it. Fusible alloy should be then melted and poured into the ring. In pouring, it should be directed immediately upon the center of the cusp-button, in order to prevent an imperfect die, or one not entirely surrounded with metal.

When the fusible alloy has crystallized, it should be cooled by dipping into water, and the rubber ring then detached. The cusp-button may be then easily separated by gently tapping, and replaced in the tray, and the die is ready for the swaging of the gold. This is accomplished in the manner indicated, by the use of a buckshot, or ingot of lead, driven to place with a swaging hammer, after which the surplus may be trimmed away, and the cusps finally adjusted to proper relation with the band and occlusion, and then soldered.

The use of these cusp-buttons offers the additional advantage of affording opportunity for modifying or improving the occlusion when indicated, by building the cusps up with mouldine at the desired points, and to the desired depth, before pouring the die. Also, in cases where the band may be so short as to require a deeper cusp, such may be easily secured by raising the cusp-button on the moulding plate with a base of mouldine of sufficient thickness to make up the deficiency in depth, and trimmed to closely follow the outline, before pouring the die.

#### **Millett's System.**

The most modern invention in die-plates, and processes of swaging, and one possessing some new and good features, has been recently introduced in Millett's System.



This consists of a large die-plate comprising about four hundred raised moulds of cusp-forms, and buccal and labial surfaces, systematically arranged in sizes, and for each side of the mouth, and the necessary apparatus for swaging.

While the forms are similar in size and shape to those of the Hollingsworth System, the die-plate offers a greater range of application in a larger variety for selection, and the advantage of each one being an integral part of the plate, which overcomes the possibility of the disarrangement or loss of any of them.

This, together with the method of securing the die, and the process of swaging, without doubt affords greater simplicity and quicker results, but the important feature of not being able to adjust the cusp-forms to position on the band, as an aid in their proper selection, is a disadvantage.

The apparatus for swaging includes a cylinder and plunger, and a bed-plate and soft rubber block, which are similar to Ash's crown swaging outfit.

The bed-plate is designed for the purpose of  
**Application.** holding a sufficient quantity of ordinary sealing-wax to secure a die of any of the individual moulds, and fits accurately in the cylinder.

The sealing-wax contained in the bed-plate is softened by passing through a flame, and then pressed firmly over the form selected to be duplicated in gold, and which is *calculated* to be the nearest approach to the requirements.

This gives an accurate impression of the form, in the wax, which, after chilling in cold water, is sufficiently hard to answer the purpose of a die.

This is placed in the cylinder, the gold annealed and placed on top of it, the soft rubber block inserted, the plunger placed over all, and the swaging accomplished by driving the plunger into the cylinder with a moderately heavy swaging hammer.

In cases where a deeper cusp-form is desired, or necessary, a rim of warm sealing-wax may be moulded around the edge of the imprint until sufficient increase of depth is obtained, before swaging. Where a more shallow reproduction is indicated, the sealing-wax may be trimmed or pared down accordingly; or, if the summits of one or more of the individual points or cusps need to be made more pronounced, the die may be deepened at such points with a sharp burr or suitably shaped cutting instrument.

### **Lowry System.**

This system, devised by Dr. H. S. Lowry, departs from other methods where moulds are used, and, like the original die-plates, comprises the actual dies to be used in the process of swaging.

The improvement lies in the more extensive selection, and the supplemental *trial caps* which represent the exact size and formation of the dies.

The dies are individual in character, made of a practically indestructible metal, and each one is numbered. The trial caps are numbered corresponding with the dies of which they are counterparts, and are provided with a projecting stem, which facilitates holding and handling them in their adjustment to the band, in the process of selecting the one best suited to the requirements.

The system includes a moderately good selection of about sixty dies of cusp-forms; and a smaller number of the buccal surfaces of bicuspid and molars, and the labial surfaces of the anterior teeth, with corresponding complement dies, together with a "stamper" for swaging, and soldering pliers for general use.

The trial caps are adjusted to position on the band, until a selection is made of the one which best meets the requirements. The number of this is noted, and the corresponding die selected. The surface of the die should then be slightly oiled, and the gold cut, annealed, and placed over it, and then adjusted to position in the "stamper." A buckshot or piece of lead of suitable proportions should then be placed upon the gold, and the plunger of the "stamper" brought in contact.

The plunger is held quite securely in any position by means of frictional contact, which facilitates the swaging in preventing the rebounding of the die, or the slipping or moving of the gold or lead during the process of driving it down by the use of a swaging hammer.

A special die, containing two depressions of different sizes, is provided for improving the occlusion when indicated, by lengthening or deepening the cusps at any desired point. After the cusps have been swaged, the point to be raised or deepened should be placed over the hole, and further swaged to the necessary extent by the use of a blunt piece of wood of suitable size.

### **Baird System.**

Another recent device in this line is the system and method designed by Dr. W. H. Baird.

This consists of a heavy pair of swaging pliers, with parallel jaws, one of which is grooved to admit of slides which support the dies.

The dies are raised and individual in character, made of a comparatively indestructible metal, and include about two hundred and fifty moderately good forms. These comprise a good selection of *cusp-forms*, and a proportionate number of the buccal surfaces of bicuspid and molars, and the labial and lingual surfaces of the anterior teeth.

**Application.** When the selection of the form calculated to best meet the requirements has been made, it is then placed in position on the slide, and the latter adjusted to the grooves in the pliers.

The gold is then annealed, placed upon the die, and covered with a pad of soft rubber, or piece of sheet lead of adequate thickness (about 3-16 of an inch), and dimensions, to serve as a counter-die. The pliers are then closed and held together with sufficient firmness to prevent any rebound during the process of swaging, which is accomplished with a hammer.

The flat base to each die precludes any opportunity for accurately adjusting to the band, in making the selection; and the system affords no provision for altering the cusp reproductions to more perfectly meet the requirements of occlusion, depending upon the variety and general application of the dies for this purpose.

*(To be continued.)*





## Porcelain Fillings.

### After 12 Years.

By W. S. CAPON, D. D. S., Philadelphia, Pa.

It is just twelve years since I made my first porcelain inlay and having devoted the greater part of my professional career to the practice and study of this class of work, I feel that an experience covering so many years on a comparatively new subject should be received as having sufficient value to be a guide to many who have already acquired the first rudiments and a little experience.

Almost daily I am asked the question, "To what extent will I recommend that porcelain should be used?" I reply that much depends on one's adaptability to unite art with mechanics. In other words, to know when and where beauty and strength can be harmonized to a practical extent. Such a knowledge is desirable in general dentistry, but in a great degree requisite in the practice of this special branch.

My first public clinic was given ten years ago, and while I succeeded in interesting a few, even those would shake their heads and turn away saying that cement would wash from the joints and it seemed nonsense to give time to what would likely be inevitable failure.

At each succeeding clinic the interest increased until now a dental society meeting is not complete unless a demonstration of this work is included as an attraction—in fact, many times it is the headline; for even a very indifferent demonstration shows the great possibilities of porcelain.

My operations have extended over many hundreds of cases, and it is to be expected that our best results come from simple inlays. I mean by that term a cavity filled with porcelain on the labial or buccal surfaces of teeth where there is no strain or wear except that of ordinary cleanliness; yet it is a surprise to know the great durability of corner sections.

I have a number of cases ranging from eight to twelve years of service that I have watched with great interest, and in a few cases they have

been positively abused, and yet they stand the strain although held with cement without the aid of pins or other means.

My experience is equally satisfactory with central and lateral cross-sections, even to those of lower incisors, which you all know are difficult teeth to repair. I have only had to replace one tip, and that was on a very prominent central, after nearly nine years of use.

Porcelain is an ideal filling in approximal cavities. It saves poor structure and, to a great extent, conceals the fact that they are filled more than in many other positions. It is very gratifying to know that by this means I have been able to give a natural appearance to the teeth of many ladies who came to me as young girls with cement or discolored gutta-percha remnants and a source of satisfaction to these young patients, not to have the same cavities excavated and refilled every few months.

I have been alluding to the six anterior teeth because it is there we find the greater number of opportunities where porcelain is applicable. Next I shall mention the distal approximal surfaces of cuspids, especially when the cavity is extensive. In such places porcelain is an excellent material because it enables the operator to overcome what is a most tiresome operation with gold, in a manner acceptable and gratifying both in restoration and durability. The same can be said of bicuspid; but now I am approaching treacherous ground, because these teeth are much used and more frequently decayed, offering a temptation for an esthetic operation such as can be obtained with a greater degree with this material.

A bicuspid is a small molar presenting large surfaces, and it has large contours with proportionately small supporting surfaces with a closely occluding antagonist that locks with every motion required for mastication. Add to this the great force brought to bear on an underlying substance like porcelain, which is stuck in position, and then you have an idea of the requirements necessary for a successful porcelain filling.

It may seem an exaggeration when I say, the larger the cavity the better the chance for success, and in many cases where I have supplied the whole palatine or buccal surface, they have given the greatest satisfaction, having had to replace but one in all these years. I account for that because of easy accessibility and the opportunity to change the form of the tooth, a better foundation giving the resistance of a large surface without leverage of an overhanging contour.

It is not my desire to discourage the filling of these teeth with porcelain, but rather to give you guidance that may save disappointments. I

have had failures, but I am glad to say that my successes more than counterbalance them, otherwise I could not stand before you as an exponent of this work without fear of loss to my professional standing.

**Porcelain  
in Molars.**

Passing from treacherous ground I will just say a few words about putting porcelain in molars and term it dangerous practice, because its use indiscriminately in these teeth has done more to discourage beginners than in any other portion of the mouth. Much that I have said regarding bicuspidis can be applied to molars, and yet under a few circumstances porcelain may be used to advantage; but in no case has its durability been equal to that which has been shown in other teeth.

The first objection is the difficulty in procuring sufficient space to obtain a correct mould of the cavity, and even when there are such opportunities, there is still the difficulty in holding the metal rigid until a perfect outline is secured. Succeeding in this there is still some uncertainty, as large surfaces in being fused frequently change form sufficient to cause a poor joint, which is a weak spot through loss of cement with wear and wash. I have been successful in making some very fair molar fillings and they have stood the wear for a number of years, but upon close observation I notice that the joints seem a trifle larger, which is caused by the constant pressure in mastication, breaking minute particles off the edges.

**Methods  
and Materials.**

It is more than fourteen years since porcelain was used in a practical manner and as it is at the present time. Since then other methods have been devised, principally for use of a low fusing body. It is not my wish to open this question so much aired during the last two or three years, as to the virtues of low and high fusing porcelain. Both have their defenders and equal results are claimed by each side. I have always used the high fusing body and my statements are based on the use of that material, and it has a record unapproached by any other of its kind.

Of course, it is to be expected that in twelve years our materials would show improvement. The most notable is the variety of shades in porcelain and the uniformity of fusing, two great assistants. The improvement in appliances is the addition of electricity and the latest furnaces are simply perfect in form and practical working, making the possibility for perfect work within the reach of all.

During this time we have known how to do the work, but its ultimate success depended on one material and that was cement. It was our anchor and our only hope. Its failure meant more than I, for one, care to contemplate, and while it is one of the materials that has not been improved in the life of this work and it is still deficient, yet I forgive it for the total good results. It has spoiled the beauty of our almost perfectly shaded inlay and

caused much disappointment, but it has virtues that will probably never be equaled. I have used many that are good and those that had the greatest number of requisites as assistants to porcelain I used loyally and through their efficiency I am enabled to give you this paper.

In the last year or two I have added to my list, and if after a few years I find them equal to my standard I shall give them all the credit due.

**Advantages  
of Porcelain.**

Any dentist practicing this branch of dentistry and having fair success will learn many advantages that will compensate for any losses that may arise through the acquirement of the knowledge and practice sufficient to insure confidence because tooth structure is supplied with a material approximating what has been lost. It strengthens poor teeth to a surprising degree—in fact, I have seen many cases where teeth have broken away, leaving the porcelain strong and intact, particularly in bicus-pids. It is less tiresome to both patient and operator and allows a brief respite to the unavoidable exchange of vitiated atmosphere to which unfortunately we are subjected in the practice of dentistry. One of its greatest recommendations is the fact of being a perfect non-conductor, at least as near perfect as any filling can be.

**Effect of Cement  
on the Pulp.**

Many times it is asked if my experience has not shown that cement irritates the pulp and eventually causes death, particularly in large labial cavities where the teeth are hyper-sensitive. My reply has been, as it is now; my assertion after more matured experience, that I have no such trouble, although I keep a close record of all operations. I advance two reasons for such good results—one theoretical and the other practical. First, it may be that in labial cavities the amount of cement being a very thin layer, the harmful influence is reduced to a minimum, and yet in other cavities I know there is considerable cement between the porcelain and bottom of cavity, so that at that rate this theory would seem valueless. My practical way of reducing a probability of trouble with any filling material is to coat the cavity with rubber lining varnish. I do not always use it with porcelain, because it is not advisable to risk the possibility of destroying the natural affinity that cement has for tooth substance. This might seem like drawing a very fine line, but very thin inlays have small means of retention and every point must be considered.

**Crowns on Roots  
Having Living Pulp.**

As I am hovering over debatable ground I may be allowed to make a statement in regard to sensitive teeth prepared for crowns. A large part of my practice of porcelain consists of using to a marked extent the porcelain jacket, which obviates the necessity of killing pulps. In many hundreds of these crowns I do not treat one per cent for any after trouble

of root or portion of tooth crowned. I make this statement for the benefit of all, but especially for those dentists who kill everything in sight or near it. I know that there are men who never cover a tooth in any manner without first devitalizing. If such practice is good dentistry, then I, for one, am on the wrong track and must apologize for the terrible array of living pulps that I have proudly placed to my credit.

To reiterate what I have contended for years and  
**Durability of** what must now be accepted, porcelain fillings do not  
**Porcelain Fillings.** fall out through deterioration of cement; they improve with age and they are the best of non-conductors. They are held by tenacity of cement and undercuts in cavities are not necessary, but an undercut in the porcelain is imperative.

It is the strongest and most durable filling for poor teeth, and the limit of its possibilities is regulated by the experience of the operator. It saves time and health and is most desirable to the majority of patients and, as one of my lady patients in poor health recently said, "It is delightfully restful."

Rubber dam is always unpleasant, and with some people it is positively unbearable; with this work the use of it is reduced to rare occasions.

If by accident or improper preparation a filling becomes loose, it may be replaced with little trouble, even after it has been in use for many years, and a close examination will find the cavity perfectly clean with a hardened wall of dentine.

In conclusion, let me ask the prejudiced ones if porcelain has not a right to be placed on the list with the other permanent filling materials, and those who practice this work earned the privilege of being considered at least fair dentists if they do save teeth outside of old prescribed methods.

To the unbiased I would ask a fair consideration, as the practice of porcelain does not interfere with the saving of teeth otherwise, and is a grand assistant.

To those who are favorably impressed and are endeavoring to help with the good work, I will ask of them a continuance of their efforts with the precaution to be careful and not too enthusiastic, so that in time our records will be such that we may have undisputed position in the special work of dental ceramics.



## A Study of Acids Occurring in the Mouth.

By H. H. BOOM, M. D., Philadelphia, Pa.

When the mixed saliva, normally alkaline, possesses an acid reaction, the acidifying substances must result, either from processes of fermentation of substances retained in the mouth, or from a true glandular secretion entering the mouth.

Fermentation of food particles in the mouth is brought about through the exciting presence of certain bacterial organisms.

The variety of fermentation induced, and the products resulting, will be determined by the character of the food particles and the nature of the bacterial forms present

Dr. Willoughby Miller, in his work "The Micro-organisms of the Human Mouth," states that of twenty-five varieties of bacteria occurring in the mouth, sixteen were found capable of occasioning fermentation of carbo-hydrates, with the production of acid results.

### **Lactic Acid in the Mouth.**

Of the acids resulting from fermentation of carbo-hydrates in the mouth, the one occurring in the largest quantity and possessing the greatest interest to the dentist is lactic acid.

Lactic acid,  $C_3H_6O_3$  is best known as the acid of sour milk.

The pure acid is a colorless, syrupy, strongly acid liquid. It is without odor, and has a marked affinity for moisture, which it readily absorbs from the air. It mixes readily with ether, alcohol and water. There exist several varieties of lactic acid. One of these varieties, known as para-lactic or sarco-lactic acid, obtained from meat, turns the plane of polarized light towards the right.

Another variety of lactic acid, resulting from a peculiar fermentation of sugar, is identical in every respect with para-lactic save that it occasions left polarization.

Lactic acid results from the fermentation of many vegetable substances, and also from meats.

It is interesting to the dental operator, as it is produced in larger quantity from fermentation of food particles in the mouth than is any other acidulous substance.

Its relative proportion in saliva has never been found to exceed .75 of 1 per cent.

The production of lactic acid through fermentation occurring in the mouth is generally accompanied by the formation, in much smaller quanti-

ties, of certain other acids, among which formic, acetic and butyric acids are best known.

Quoting from Dr. Miller's work:

"A particle of starch introduced into the oral cavity would undergo about the following successive changes: In the first place, it is, in part at least, transformed into grape sugar by the action of ptyalin of the saliva. This grape sugar in turn is split into lactic acid through the action of various bacteria in the mouth. The lactic acid unites with the lime of the teeth or tartar, forming lactate of lime."

The latter may then undergo various fermentations giving rise to new acid products and to the formations of the corresponding lime salts, from which, by still other processes of fermentation, acids are again produced.

When the acidity of saliva does not arise from local fermentative action, we may, by the use of litmus, detect a positively acid secretion issuing from the labial and buccal glands and pouring directly into the oral cavity.

Such instances afford a symptom of a general constitutional condition.

The constitutional condition present is generally  
**Diathesis.** an inherited one, and is known as "diathesis." The medical profession recognize a number of these so-called diatheses, or personal predispositions to certain special diseases.

Thus we study the tuberculous diathesis, the gouty, the rheumatic, the scrofulous diathesis, etc.

In many of these diatheses we find an increased acidity of all of the fluids of the body. This is particularly true of the rheumatic and the gouty diathesis.

It has been well established, by careful observation, that in both the rheumatic and the gouty diathesis the underlying pathological condition is the diminution in the number of the red blood corpuscles, and an apparent increase in the number of white blood corpuscles.

Now, if the number of red blood corpuscles be decreased, we would have a lessened quantity of oxygen carried from the lungs to all structures of the body.

Through this deficiency of oxygen the waste  
**Theory of Acidity** products, especially of albuminoids, fail to be completely converted into the normal excretory substance  
**of Saliva.** urea; but, in its stead, uric acid is formed and passes into the blood.

When uric acid enters the alkaline blood, it probably unites with sodium to form the neutral sodium urate,  $\text{Na}_2\text{C}_5\text{H}_2\text{N}_4\text{O}_8$ .

From a general deficiency of oxygen all cellular structures suffer, so that waste products of the cells throughout the body are but imperfectly

removed, and carbon dioxide accumulates in the cell instead of being carried away to the lungs by the red blood discs.

If we dissolve neutral sodium urate in water, in a test tube, and pass a current of  $\text{CO}_2$  gas through the solution, the neutral sodium urate at once changes to acid sodium urate, the reaction being  $\text{Na}_2\text{C}_5\text{H}_2\text{N}_4\text{O}_3$  plus  $2 \text{CO}_2$  plus  $\text{H}_2\text{O}$  equals  $\text{NaHC}_5\text{H}_2\text{N}_4\text{O}_3$  plus  $\text{NaHCO}_3$  plus  $\text{CO}_2$ .

Now we have the same conditions present in the living cells, throughout the body as are present in the experiment. The cell contains  $\text{CO}_2$  not removed through a deficient carrying capacity of the fewer red blood corpuscles.

The cell contains neutral sodium urate as a deposition from the blood.

Moisture is present, so that all conditions are favorable to the formation of acid sodium urate, and we can safely assume that this substance is so produced.

We now find present in the cell acid sodium urate, acid sodium carbonate, an excess of carbon dioxide and moisture. Separated from the cell by the thin capillary wall circulates the blood, containing neutral sodium phosphate.

The neutral sodium phosphate, being readily diffusible, passes from the blood through the capillary wall into the cell, and, coming in contact with acid sodium urate, it at once undergoes conversion into acid sodium phosphate, and as such, in the case of the labial glands, is at once poured into the oral cavity.

The reaction here taking place would be represented by the equation:  $\text{NaHC}_5\text{H}_2\text{N}_4\text{O}_3$  plus  $\text{Na}_2\text{HPO}_4$  equals  $\text{Na}_2\text{C}_5\text{H}_2\text{N}_4\text{O}_3$  plus  $\text{NaH}_2\text{PO}_4$ .

The newly formed acid sodium phosphate, readily soluble, at once passes from the labial glands into the oral cavity.

The difficultly soluble neutral sodium urate is retained in the cell structure to be there acted upon by carbon dioxide and moisture, and to again revert to the form of acid sodium urate to again act upon an additional quantity of sodium phosphate from the blood.

Upon this chemical act the acidity of the saliva largely depends.

We make the broad statement then, that in pathological constitutional conditions, although we may find uric acid, acetic acid and other organic acids present in saliva, the acidity of such saliva is largely due to the presence in it of acid phosphate of sodium.

This is offered as a theory, the truth of which chemistry seems to sustain.



## **New Jersey State Dental Society.**

**Thirty-First Annual Meeting, Thursday, July 18, 1901.**

### **Discussion of Dr. Capon's Paper.**

**Dr. Joseph Head,  
Philadelphia, Pa.**

Dr. Capon has given us a very interesting account of the length of time he has practiced and his measure of success, all of which I can heartily endorse. Recent records brought to our knowledge by Dr. Kirk show conclusively that gold was used in the eighth century for filling, and the length of time that it has been used, in addition to all the theories, would conclusively prove to most of us that gold is a very good filling material; yet we must remember that only ten or twelve years ago there was a great outcry against the use of gold, and amalgam, cements and the other fillings for a time bid fair to drive gold from the field, and yet, I think, gentlemen, that gold will still be used in spite of its manifest drawbacks. Yet it is most surprising in this advanced age of scientific research that one of our best filling materials should be a material that has to be applied by the crude method of hammering instead of being cemented. It is most surprising that a patient should have to be subjected to the grave inconvenience of having a non-adhesive material pounded, through a long period of operation into a painful cavity. In spite of the great record that gold has made, we must always remember that there is this grave and serious objection to the ordinary metallic filling, inasmuch as it is held in place simply and purely by means of undercuts, that it is non-adhesive to the tooth structure. It is a scientific axiom that an adhesive filling is far superior to one that is non-adhesive. The adhesive filling will be a tooth preserver from the edge to the very bottom of the cavity, a non-adhesive filling will probably only be a tooth preserver so far as it prevents the entrance of bacteria on the edge, for we have found almost universally that if the cohesive gold was defective on any part of the edge, decay almost univer-

sally followed. We know from experience that in cases of cement fillings bacteria may enter, yet the bacteria that do enter find themselves in such an unproductive country that, like an army deprived of its commissariat, they die and are incapable of doing harm. Therefore, in speaking of the porcelain inlay in contradistinction to all unadhesive filling materials, I would say that, while the perfectly adapted inlay preserves tooth structure partially by excluding bacteria and has the great advantage that it may match the tooth, it also has the property of inhibiting the growth of bacteria that may enter the margins.

**Dr. Osmun,  
Newark, N. J.**

While Dr. Capon was reading his paper it occurred to me that we have accepted porcelain as one of the things desirable, and which an up-to-date dentist is able to use. It has been said that dentists get a particular thing that proves successful, in their hands, and exclude all other kinds of operations forthwith. They take one particular kind of gold, one particular kind of enamel, or one favorite kind of cement and stick to that. They get in the habit of using porcelain, they have success with it, and from that day on they are porcelain users only. All kinds and conditions of fillings must be porcelain. Another man, who has failures with it, condemns it, and falls back on gold. While I am delighted to hear Dr. Capon's paper, it seems to me that all these different fillings have their merits, and the question of their use is one of judgment. What do you, gentlemen, as individual operators, think? If one says porcelain fillings are of no use, why does he say so? The keynote is that the dentist must use an educated judgment so as to know when to use these various and different methods. I have had some experience with porcelain fillings that has been exceedingly satisfactory, and some that I wish I had not had. I have had some experience with gold fillings that was very satisfactory indeed, and some that was not so satisfactory—the other fellow has done them over after I got through! But I do not condemn gold, neither do I condemn porcelain. Neither do I tie up to porcelain fillings, and say that there is nothing else but that with which to fill teeth. I try, and it is my earnest endeavor, to select my filling material according to the case in hand, and where we can do that we will find that all these various methods and kinds of fillings will be of advantage to us and a blessing to our patients.

**Dr. Duffield,  
Camden, N. J.**

There is one point in Dr. Capon's paper which I think requires a great deal of consideration from the society, and that is the statement that he rarely, if ever, devitalizes teeth, prior to capping. There is no doubt in my mind that all teeth that are devitalized, no matter how care-

fully the work may be done, are susceptible to future trouble which seldom occurs in teeth containing live pulps.

I think that is one point that should be fully discussed at this meeting:

About ten years ago I had some experience with  
**Dr. McAlpine.** this matter which was more or less satisfactory, but I did not follow it up as closely as Dr. Capon did, and therefore am not qualified, perhaps, to express an opinion about it. Recently I have revived my interest somewhat in it, and I intend to follow it up more closely.

However, there are two points which might be of interest. One is the durability of the cement used for setting the inlays—I am inclined to think that is a factor which need not be very seriously considered. There is no doubt that if the filling fits the cavity perfectly, or very nearly so, the presence of the cement is a matter of minor importance. I happen to have in my pocket some work done ten years ago; the tooth afterwards decayed on the other side and broke, and it is quite easy to see the durability of the cement used in setting that inlay.

I think with the improvements in the body that we have now, we shall be more successful in matching the color of the teeth than we were before. There has apparently been recently a revival of interest amongst the manufacturers and an effort made to produce bodies and enamels that are better than any we ever had before.

From my knowledge of the subject I can endorse everything that Dr. Capon has stated in his paper.

My experience with this kind of filling goes back for some time, for I began with the glass fillings, which did not seem to be desirable for many reasons; one was that they were opaque, and it was difficult to match color. I have one or two cases in mind where the tooth afterwards changed color and necessitated the removal of the inlay, and in removing them it was demonstrated very satisfactorily that the cement had not caused the trouble at all, and, as I said before, the question of the permanency of the investing material is not the most important factor.

I had not intended to speak on this question, as I  
**Dr. Chas. H. Meeker,** did not have the opportunity of listening to Dr.  
**Newark, N. J.** Capon's paper and the points which he brought out.

I can speak, however, of my own experience and possibly touch upon some points that Dr. Capon has mentioned.

I have used porcelain fillings and, like the preceding speaker, commenced with glass fillings some fifteen or twenty years ago. When I first saw Dr. Jenkins do his work with porcelain, it seemed so very easy that I thought I could do it. That is the trouble with the American dentist—he can do anything! I put in quite a number of fillings, and, as time passed

on, took them out and put in something else. All dentists have to buy their experience. Possibly I use more judgment now than I did then when I put in a porcelain filling. I have owned, I think, eight different furnaces. I have one large McBriar furnace now, and I use it in making crowns and inlays. Where I find that the principle of mechanics will support such a filling, I use an inlay, and my success is reasonably good. I have had some in now for four years. I saw one a few days ago which, four years ago, I placed in a central incisor, and it was doing good work. I have seen many others that have been in a year or a year and a half where the patients have not been very particular in the care of the teeth, and the fillings are all doing good work.

There is one method by which I am reasonably sure that any dentist, whether he owns a furnace or not, can do porcelain work, and the porcelain will stay in, provided the tooth stays in the mouth. I shall try and illustrate that method this afternoon at a clinic. I will only take about twenty minutes, but I think the illustration I give now will show conclusively that the work will stand. We often find upper or lower twelve-year molars with the crown gone, and the walls on the sides good, like that (producing a tooth illustrating the method described). There are a number of dental houses that manufacture a little round porcelain inlay button that has a groove in the middle. When I have a cavity such as described, my practice is to take a large bur and grind out the tooth to nearly the circumference of this inlay, remove all the decay, fit the inlay in the cavity, then mix the cement, put it in, press the inlay down, and have the teeth antagonize, and there is a very pretty filling that is apt to stay there as long as the walls of the tooth remain. I have been doing that for three or four years in every case where such a cavity occurs. I do not think it is practical in a tooth where there is an approximal cavity, because the cement will be interfered with by the secretions of the mouth.

This is a very interesting subject, and I think it would be wise, if those who think that by and by they will adopt it, to take this opportunity of asking questions concerning this method, as we have with us two

disciples in the art.

I would like to ask Dr. Capon or Dr. Head what method they use in regard to the buccal cavity on the lower second molar or wisdom tooth; how it is kept dry underneath the margin of the gum?

(The president stated that the question would be answered when Dr. Capon closed the discussion.)

**Dr. Chase,**  
**Philadelphia, Pa.**

I do not know that I can say much that will interest you on this subject. Every person who knows Dr. Capon, knows full well that as an exponent of this art, he has no superior, and is capable of teaching almost any of us. But I think the day has gone by when the putting in of porcelain fillings is a mooted question. It is accepted and has come to stay. Like all the other materials that we use, it is to be applied with judgment and care in the selection of the cavity in which it is to go; care in the preparation of that cavity, care in the whole operation.

The Doctor has said that occasionally he puts in an intermediary between the cement and the tooth. I think that is a dangerous practice.

It is true the ideal material for holding porcelain filling in cavities has not yet arrived. Some of the gentlemen here—I know Dr. Head for one, and I think Dr. Capon, also—have used other materials for holding in these fillings, but I think they invariably come back to the use of cement, and I do not think we can at present get any better material.

As to the question of the porcelain fillings saving the tooth, no doubt it does. We also know that a properly inserted cement filling will save the tooth so long as the cement will stay in the cavity. With the union of these two in proper places, I do not think that we have any filling that will take their place.

Dr. Duffield has touched on the question of the devitalizing of the pulp and the essayist also referred to it. I very rarely find it necessary so to do; I do not believe in the wholesale destruction of pulps; if it becomes necessary, as it sometimes does, well enough, but to simply devitalize the pulp for the purpose of making a crown, I most decidedly condemn and do not practice it, and stand on the same ground as Dr. Capon.

**Dr. Noble.**

I would like to ask Dr. Capon if he has any particular kind of cement that he uses.

**Dr. Head.**

Very much has been said from time to time on the subject of the destruction of dental pulp by the use of phosphoric acid, and I wonder that some positive scientific data on that subject has not been given to the profession. Has any one ever tried to destroy a pulp by applying phosphoric acid? I sincerely hope that this subject will be taken more seriously than the hot weather would naturally allow, and that those who are so very sure that oxyphosphate of zinc kills pulp will seriously try the experiment of applying phosphoric acid to a live pulp, if not on their patients, on themselves.

**Dr. Pruden,**  
**Paterson, N. J.**

I would like to ask Dr. Capon how he removes porcelain inlays? I had very great difficulty with a case recently, and I should like to ask that question.



**Dr. Sanger,  
East Orange, N. J.**

I did not hear the paper read, but I know from past experience that anything Dr. Capon writes on the question of porcelain inlays must be good, because he is an authority on that subject.

However, I can say one or two things from my own experience with porcelain inlays which may possibly be of some slight value.

One thing is as to the question of color. Following a paper read by Dr. Head last winter, in New York, I took up a line of experiments to overcome, if possible, the effect of light, from different directions, on porcelain inlays. You who have put in porcelain inlays know that the great bugbear of the operator is the fact that when you look directly at the inlay the color may be all right, but when you look at it from one side the color is all wrong; from different angles we get different effects, according to the transparency of the materials used. I have succeeded in overcoming this difficulty slightly by using as the basis of the inlay a dead white color, a color which is almost absolutely opaque, and then laying over the shade which I desire to produce, following out, in a measure, the principle that is applied in the making of porcelain teeth in the trade, where the biscuit is dense first, and afterwards the shades are produced by laying over the first body, as I understand it.

This is only a suggestion, for you who are porcelain workers must meet that difficulty.

**Dr. Capon.**

I think that a paper going over a term of ten or twelve years is more acceptable to you, than one which only covers four or five years, because I think time has something to do with the position.

I want, too, to rectify a misunderstanding under which some seem to be laboring, by saying that I do not wish and never desired to antagonize the use of gold at any time. I merely suggest porcelain in the light of a strong recruit in a company of volunteer soldiers. Move along a little bit and let the new man in; he is strong and able to take his part. I do not deprecate the use of gold in its place, but porcelain has its place also, and I am delighted to know that it is accepted today by those who have had experience in that line.

On the subject of cement I would say that the cement which I have used the most of is Josti's Insoluble cement. You can go back to thirteen or fourteen years for results on inlay work where that cement was used. With regard to consistency you need not be afraid of having the cement mixed too thin if you have good joints, because some of my most durable work was mixed with a very thin substance. During the last seven years I have used Harvard cement, which has the advantage of being very easily handled. I am now testing three other cements and have been for

two or three years, and when I feel confidence in them I will say just as good a word for them. I am testing Ash & Sons T. A. S., which is a good cement.

I do not believe it is possible to make an opaque body translucent; the nearest we can come to it is to fuse thoroughly and trust to our cement.

Many of you have never seen porcelain inlays of longer standing than six or eight years, but I would like you to see one that Dr. \_\_\_\_\_ has after ten years' use in the mouth. I have no work here, but Dr. Head can show you some that I put in three or four years ago, and I have some in the mouth of Dr. Stokes, of Philadelphia, which will show the idea both for gold caps and inlay work.

I do not always use inlays; sometimes, if I cannot get a proper mould I leave them alone entirely.

The rubber lining that I refer to is only a fine solution of rubber varnish with two or three other ingredients, and is very thin, and I do not always use it.

Concerning the question asked with reference to the removal of an inlay, I never remove an inlay and try to put it back again, because the inlay is always broken; I never took one out but that the edges were broken, or it was completely destroyed. Many times I have removed them where one part has been broken entirely away, and left the other part there; in such instances it is a case of burs vs. porcelain. I always make a new inlay, and never expect to take one out to be returned because the cavity will not be the same; you must cut a great deal, and with a great deal of strength.

Regarding the strength of inlays and their density I have had cases where I have cut the corner sections of inlays down to the finest edge and not broken them off.

**Dr. D. Jones,**  
**New Haven, Conn.**

I would like to ask Dr. Capon to state his experience concerning discoloration of teeth after porcelain inlays have been placed and also with regard to the permanency of the coloring matter.

**Dr. Capon.**

You mean in a live tooth having a live pulp?

**Dr. D. Jones.**

Yes, or dead; if the tooth changes color after the filling is inserted.

**Dr. Capon.**

A devitalized tooth will sometimes change its color; of course, you must take chances on that. But if the pulp is alive you will probably meet with a most agreeable surprise, because after two or three years there is a blending of the colors. Time and again I have put in inlays that were simply perfect until the cement was laid in, and then I did not think so highly of them; but six months or a year afterwards the same work has shown the best

results. It has been the experience of all operating this work that time improves the matching of the inlay with the tooth.

Oh, do you mean when there was no dentine to speak of underneath?

**Dr. Jones.** In inlay work is it not necessary to leave more of the thin enamel than in gold filling?

**Dr. Capon.** As long as you are in the body of the tooth you can control it better. I have noticed such a thing, but it does not amount to much, and I have thought of controlling it. The deeper and the larger the work, the easier to control the color today, and the better it will look after a while, because it is not so affected by the cement.

**Dr. Head.** With the permission of the president I would like to add just one word concerning the question of the discoloration of the edges, merely to supplement what Dr. Capon has said.

In putting in a gold filling, if thin overhanging enamel walls are allowed to remain, discoloration in time will come, and likewise when preparing the cavity for porcelain the same must be true, inasmuch as the same principle is involved. Therefore, if it is desired to have permanency in the color of the porcelain and of the enamel, the margin must be freely cut away so as to have good clean enamel walls supported by healthy dentine.

**Dr. Capon.** Dr. Head thinks it depends on the preparation of the cavity. I will not go into details in reference to that now, but some day I will take up the subject of the preparation of cavities, and, I assure you, it will prove as interesting as any of the rest of the subject. It is a very important factor.

Dr. Hindle, chairman of the Essay Committee, stated that owing to the death of his wife Dr. W. E. Dreyfus would not read the paper referred to in the programme.

On motion a vote of sympathy for Dr. Dreyfus was adopted and the secretary was instructed to write a letter of sympathy to Dr. Dreyfus.

Dr. Stockton presented to the meeting Dr. A. W. Kingsley, of Elizabeth, N. J., one of the founders of the New Jersey Dental Society.

The president welcomed Dr. Kingsley, who said:

**Dr. A. W. Kingsley.** I have got out of the way of public speaking and dentistry altogether. By an unfortunate accident I broke my shoulder all to pieces about eighteen years ago, so that I could not bother with dentistry, and I thought I would go to

Florida and spend my winters there, and I can say I have spent them very pleasantly, although I regret very much that I could not keep on with the practice of dentistry.

I am very much pleased to see you all, gentlemen, and to be with the society once more. (Loud applause.)

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Dr. Joseph E. Duffield stated that he had recently visited Dr. J. Foster Flagg, whom he found very ill and unable to attend this meeting, but that while he was unable to be here personally he sent his hearty greetings.

On motion of Dr. Stockton the secretary was requested to send a telegraphic communication to Dr. Flagg with the kind regards and hearty greetings of the society.

On motion of Dr. Henry A. Hull a similar resolution was adopted with reference to Dr. Green.

On motion of Dr. Luckey the executive committee was directed to request Dr. A. R. Eaton (who was not present at this meeting) to furnish a report of the work of the committee appointed to raise funds for the prosecution of illegal practitioners, of which committee Dr. Eaton was appointed chairman some time ago.

Dr. Stockton called attention to the undignified character of the press reports of the proceedings of this society and offered a resolution that a committee be reported to make press reports or employ a competent person to furnish the same to the local and other newspapers and nominated Drs. Osmun, Luckey and Sanger as such committee.

The above motion was duly seconded and after considerable discussion was withdrawn by Dr. Stockton, who stated that the discussion invoked by the resolution had effected his object, which was to call attention to the matter both on the part of the society and of the press.

H. H. Boom, M.D., of Philadelphia, Pa., then read a paper, entitled "A Study of Acids Occurring in the Mouth."

#### **Discussion of Dr. Boom's Paper.**

**Dr. Joseph Head,  
Philadelphia, Pa.**

It is with very great pleasure that I arise this evening to compliment and congratulate the society upon having such an interesting paper presented to it. Some seven or eight years ago Dr. Brubracher read a paper before our society upon these points and it was a question of decided interest as to why the acid sodium phosphate was always found in the secretions of the mouth when in the blood there was present the acid sodium urate and other salts of kindred nature.

The explanation given by the essayists seems most reasonable and we

owe a great debt of thanks to Dr. Boom, and not only we, but the entire dental and medical profession, because it is one of the most plausible explanations that I have heard for a long time. I really consider it a paper of very great importance.

From a purely dental view of the case I should think there might be two ways of treating this disorder: by the alkaline method, which would, of course, be not altogether scientific, because it would not be striking at the true cause and the real treatment so beautifully pointed out by Dr. Boom, of increasing the power of the blood by ozoning the patient by the administration of iron or some of its kindred salts in order that the oxy-hemoglobin in the blood should be increased and therefore the power of the blood to oxygenize the tissues raised to its normal point.

There is a question, however, I would like to ask Dr. Boom before dealing with the subject more fully from the dental aspect. He spoke of the gouty diathesis, of the rheumatic diathesis, of the tuberculosis diathesis and of the scrofulous diathesis. I had thought that the tuberculosis diathesis had taken the place of the scrofulous diathesis; that the scrofulous diathesis was the diathesis which has been called the King's evil until we understood the true cause of the trouble and that the tuberculosis diathesis, in the light of modern science, had entirely taken the place of the former definition.

The great lesson we should learn from this is this (and it does supplement so beautifully the point raised in the discussion between Dr. Luckey and myself last evening): We find an acid condition that is destroying the teeth and it is absolutely necessary that we give iron to our patient, and that we know when to give it, and we then—far more readily than the medical man, in the light of our knowledge of the acids of the mouth—are able to tell when to give iron. It would be perfectly preposterous if we, in the light of our special knowledge, should have to ask a physician what he would do under those circumstances, when this physician cannot know as much about the teeth and the conditions of the mouth as we do. It would certainly tend to lower us in the estimation of the medical profession.

But we have dwelt on this subject before and this paper beautifully supplements the paper presented by Dr. Hinken, and published in the June *Cosmos*, where he dwells upon the subject of cement and the reasons for its deterioration. He also, as you may remember, pointed out that there were some seven acids found in the mouth of which acetic acid, butyric acid, formic acid and lactic acid are the principal ones. He found that the deterioration of the cement was largely due to the fact that around the necks of the teeth colonies of bacteria, especially the bacteria of lactic acid, were liable to be found and to burrow into the tooth and cause the enamel and afterwards the dentine of the tooth to be affected.

Therefore, from a dental standpoint, the treatment would be somewhat as follows: Alkaline antiseptic tooth washes should be used; we should, of course, test the saliva for acids in the mixed saliva, but, in addition to that, we should test the excretion as it comes from the glands in order that we may know whether it is a systemic or a local condition and if it is a systemic condition, in the light of what Dr. Boom has said tonight, I should unhesitatingly say that almost invariably iron, in some form or other, should be put in the blood, so that the amount of oxy-homoglobin should be increased. In addition the proper cleansing of the mouth, the use of the tooth brush, should be advocated and the gums should be brushed. For years dentists said, "Don't brush the gums, you will brush them away," but now we find that the chief cause of the recession of the gums is that bacteria are eating them; they burrow down and are even the cause of pyorrhœa. But I will not dwell on that point as it might cause a good deal of discussion. But if such is the case, if it be the bacteria and the acids in the mouth that are causing the trouble, as well as systemic conditions, the great thing for us to remember is that we should give iron systemically; we should use mouth washes; we should direct our patients to use floss silk to break up the colonies of bacteria between the teeth and the tooth brush should be used with all fearlessness, for the gums are just as able to withstand the friction of the tooth brush as the hands are able to withstand the friction of the nail brush, and the dentist who warned his patient not to use the tooth brush for washing his gums would be just as foolish as the tramp who was afraid he would lose the epidermis of his hands if he should brush them with soap, water and a nail brush. (Loud applause.)

**Dr. Cackemena,  
New York.**

The subject is foreign to me excepting so far as concerns the formation of acids, ferments and such things, which I have studied for the last ten or fifteen years, and while it may not have any direct connection with the dental subject, yet in response to the kind call of the president upon me I will bring out an idea which has occurred to me since I entered the room.

The author of the paper spoke of the formation of acids by the various ferments. It strikes me I must have a similar trouble in my mouth, for I find on arising in the morning what impresses me as being large quantities of little bacteria in my mouth. I regret to say, however, that I am not entirely satisfied as to their nature and the difference between them, but I know that oftentimes I find a very disagreeable mouth and it occurs to me that the acids, as Dr. Head has just said, may do a great deal of harm to our teeth; but the origin is due to the bacteria, and the study of the bacteria in the mouth is a very important matter.

The acid occurs, and we must think about its cause, and if we find its cause, the next step would be the successful removal of that cause. It occurs to me we ought not to draw the line just at the mouth, but that there must be a very close connection between the condition of the mouth and the condition of the stomach, and therefore the mere extinction by mouth washes or otherwise, of these bacteria, will not be sufficient. If the conditions of the mouth arise from the condition of the stomach the remedy should be applied to the stomach, and therefore the subject is far too deep for my sphere.

I myself know I suffer from it; the direct action may be acid, but we know that acids are formed from bacteria and they seem to be directly in connection with the stomach, and this subject, it occurs to me, is not such an easy one; at the same time it is a very important one, and as I am one of the sufferers and a body like yours is gathering to discuss that subject, I hope, by the time I come here next year, some of you gentlemen will devise a means of getting rid of these bacteria which are the very foundation of the evil.

**Dr. Holly Smith,  
Baltimore, Md.**

I am always glad to greet the New Jersey Society, because I feel very much at home in the presence of this organization. I am, however, reminded in my predicament when I am asked to talk on this subject of the little performance that goes on in my country neighborhood every morning. We have neighbors and our neighbors have chickens, and sometimes I have some (laughter) of my own, and when the candles of night are burned out and the coming day stands tiptoe on the mountain tops, we expect to hear from the various heralds of the morning, and there is one particular chicken who never crows until just the proper hour, and he crows with such a volume that all the other chickens, whether they be bantams, game or dunghill, might just as well stop crowing, because he has crowed. Now, Mr. President, why should I, in my strident, cockerall voice, crow? Even the gosling tones of my friend Head (loud laughter) might as well not have been voiced in the presence of a demonstration by a man who, having been honored with an invitation to be present before your society, must be credited with the knowledge of talking as a master. He has proved it.

I do believe from the position of an amateur—and when I acknowledge myself in that position I am reminded of the slang phrase of the pit, "These amateurs, they make me sick!"—but I must speak from the position of an amateur, and I believe that the dentists of New Jersey did not set any bad example to their patients when they came to Asbury Park for an outing; being preachers as well as practitioners, they have done no wrong thing to spend a few days in God's "out-of-doors." I believe that

more than half the ills that human flesh is heir to are due to a lack of oxygenation, to a too close housing, too much indulgence and long suffering and patient toil. We should live out of doors. I would say as an example of this, that last winter when I went to North Carolina I took with me a little book, "Quo Vadis;" I stopped in a house where the wife was the mother of sixteen children; the father hunted with me all day, and when he came home his wife had to rub his limbs because he was fatigued with the chase; she had to chop the wood, make the beds, attend to the rooms, nurse and attend to the children, wait on the table, cook the dinner. After I got through supper I would try to get "Quo Vadis," but it was a scramble between the lady of the house and myself. I stayed there five days and when I came away I said, "My dear madam, I have sat up until two o'clock to finish this book so that you might have it." She said, "Doctor, I have read it over once but I will read it again." (Laughter.) This goes to show what can be accomplished by people who live out of doors. When you lie in bed in that house you can see the stars shining through the shingles, and everything was practically done out of doors; they cooked out of doors and lived out of doors. The children all looked like weeds and they were never sick at all. I believe the secret of it all is that we should be more out of doors. I do not believe that bacteria would develop if we were hygienic. Why, take the animals; they don't clean their teeth, except by the natural processes. The fact that we have to do those things is because we live an artificial life, and to tell me that this pathological condition of the mouth is a dominant condition gives me but very little hope of a successful solution of the problem.

The neutralizing of acids in the mouth by the various preparations that are so multiplied and so often supplied to us, does not solve the problem, and one of my good friends here, who probably has more right to crow than any American rooster on the platform, says that he hopes when we come here next year we will have solved that problem. I dare take the position of a prophet and to say that we will not unless he and the medical profession help us. We begin to consider this a larger problem than the killing of a few bugs. The electric light does that, but there are more bugs than the electric light will kill, and if we don't leave these artificial lives and have the sense to grow up as God's own babies we shall not solve the problem.

I am very glad to know that a state of nature is going to be able to kill all the bacteria; it is very delightful to know that those who live in a perfect state of nature and are not artificial are going to be removed from all bacterial influences. But I am afraid we can hardly accept

**Dr. Joseph Head,**  
**Philadelphia, Pa.**



Dr. Holly Smith's theory in that respect, for even monkeys suffer from pyorrhœa alveolaris. Possibly though they do not live in a state of nature, in the same state that Dr. Holly Smith does! (Loud laughter.)

I want to thank Dr. Head for having so ably supplemented the position I have taken, for monkeys do not live in a state of nature; they are given to the same imprudences, being a much weaker branch of the same family, Dr. Head, that you belong to! (Loud laughter.)

I do not like to see this paper passed without looking at one particular aspect of it. As a preparatory statement I might say that after a man has passed the Board, the members become missionaries to try and bring those men into the society. This was forcibly brought to my recollection while Dr. Boom was reading his paper. I suggested to one of the gentlemen who recently passed the Board, only this afternoon, that he submit his name for membership in this society, and his response was that it did not pay him; that it was well enough to belong to the local society, but it did not pay to belong to the state society. It takes three years in the college to fit a man to become a dentist, and I have been practicing for thirty years, and yet I feel that I know but very little; but we who are members of the society absorb our knowledge year after year from such men as Dr. Boom, who come here and read specialized essays and give us knowledge that will be of inestimable benefit in our practice. By this paper alone I feel amply repaid for coming to this meeting, and I trust that hereafter we will have men come and give us explanations on these subjects that we know so little about.

I desire to thank you for the consideration you have shown and to assure you that I enjoyed the discussion very much. In regard to the remark concerning the use of iron in the treatment of rheumatism, I think it is well recognized by our medical practitioners that iron offers probably the real remedial treatment—the treatment that will effect a lasting cure of this condition.

As to the treatment for the acidulous condition of the mouth you, I am assured, know far more about that subject than I do.

If I may be allowed I wish to say that since Dr. Boom has finished it struck me that I might give one parting gosling quack in order that we perhaps might reap the full benefit of the paper.

Dr. Boom pointed out that acid sodium phosphate, which is so closely associated with the formation of tartar, is due to the lack of oxy-hemoglobin in the blood, and it seems to me it would be a fertile field of re-

search if, when we find an abnormal deposit of tartar, we have the blood examined to ascertain whether there really be a lack of oxy-homoglobin, then have the proper treatment applied and determine whether there be a decrease in the quantity of tartar deposited on the teeth.

If this should prove to be a consequence I do not hesitate to say that it will be one of the most important papers presented to the profession for years.

**Dr. C. S. Stockton,  
Newark, N. J.**

After Dr. Boom finished reading his paper I heard on all sides whisperings of approval and of a wish that he had gone further. I therefore take pleasure in offering a vote of thanks to the Doctor for his paper and of embodying in that motion a request that he come next year and continue the subject.

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## Convention of the National Dental Association.

Reported by R. C. BROPHY, M.D., D.D.S.

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"Odontomes" was the subject of an essay by Dr. Thomas L. Gilmer, of Chicago.

**Dr. Gilmer,  
Odontomes.**

"Anomalies in tooth form have ever been a source of interest to the histologist and pathologist, and did we include all forms of these growths under the head of odontomes, we might conclude that they are by no means rare. If, however, we may restrict the terms to those growths which are composed of tooth tissues, thrown together in a heterogeneous mass, and those made up of dentary bodies either remaining in nests formed by the follicular wall or held in one mass by cement—then, if the meager reports of such cases found in our literature represent their frequency of occurrence, they are exceedingly rare."

This is the opening sentence of Dr. Gilmer's paper, and the latter clause of it comprises the Doctor's definition of "Odontomes;" at least, he declared that while it was not his intent to make an arbitrary classification in opposition to such learned men as Broccu, J. Brand, Sutton and others, yet he thought that for the purpose of a more simple differentiation we may well remove all tumors from under the head of odontomes except the kinds of growths specified. In his opinion there is no justification in giving the name odontome to a tooth having an excessively de-

veloped crown or root, to a tooth having a tumor on the side of the root, to a tooth more or less perfectly developed remaining in a thickened follicle, or to a tooth having its follicular wall thickened and calcified. Neither in his opinion is it correct to include multilocular cysts of the jaws, or excementosis of the root, or impacted teeth or supernumerary teeth under such head. All of which are sometimes classified as odontomes.

Dr. Gilmer specified three classes of growths as properly entitled to specification under that term, first, those growths composed of nests of aberrant tooth forms un-united by cement, but included in a follicular cyst, a kind classified by Sutton as compound follicular cysts, but more generally referred to as dentigerous cysts. Second, that form of growth, similar to above but which is composed of a mass of more or less diminutive teeth, aberrant tooth forms and enamel drops all held in a more or less compact mass by a granular calcific material which seems to be imperfectly formed cement, and third, a class described by Sutton as composite odontomes, seemingly made up, if viewed microscopically, of a heterogeneous mass of enamel, dentine and this material having the appearance of imperfectly formed cement; these latter growths have no indication on their surfaces of tooth form, but when cut into sections and viewed microscopically, present a surprising arrangement of enamel, dentine and cement. Of these classes Dr. Gilmer said:

"These three classes, if they may be so denominated, do not in every instance, and possibly never, originate from the germ of one of the normal set of teeth, but from some other source. They are wholly dissimilar in character to all the other growths commonly denominated odontomes. As to those which I would exclude from under the head of odontomes, there can be no doubt as to their origin, if supernumerary teeth are excluded. We know definitely that their origin is from some part of the germ of the teeth of the normal set, which has been interrupted in its development. I have found by experience," the essayist, continuing, said, "that it is not safe to conclude that odontomes are not always simply a malformation of abnormal development of the normal set of teeth. If this were universally true, then we must find one tooth missing from the normal set, if an odontome be present.

"I am unwilling to say that an odontome never originated in the stead of one of the normal set of teeth, but in two cases out of three occurring in my practice all of the normal set of teeth were accounted for. In the third case there was insufficient history on which to base a positive opinion either way.

**Supernumerary  
Teeth.**

"No one, so far as I have knowledge, has, in his embryo histological investigation, discovered to a certainty the origin of supernumerary teeth, or odontomes; therefore all knowledge we have on the subject is purely speculative." Of the theories advanced, that of Dean was quoted prominently, this theory being that the epithelial cord after its separation from the enamel organ might not in all instances be wholly absorbed, and that these unatrophied persistent portions of the cord might, in the presence of the underlying connective tissue, be able to stimulate in it an activity which would result in supernumerary teeth. If this theory be correct, Dr. Gilmer said, then the supposition that odontomes are simply the result of an error in development of some one of the normal set of teeth does not necessarily follow. Black was quoted as having found in a few instances that there are additional buds given off from the epithelial lamina and as suggesting that these may be the origin of the supernumerary teeth, and Dr. Gilmer adds, "and if so, such buds may also account for odontomes as well."

**Dermoids.**

Following further theorization, the essayist said: "Dermoids in parts of the body outside the jaws are supposed to be caused in some instances by inclusion of epithelial tissues during foetal development, and it may be in the development of the jaws a part of the epiblastic layer is enclosed by the mesoblast and supernumerary teeth and these nests of aberrant tooth forms united, or ununited results, similar to the origin of an epithelioma. The development of dermoids in parts of the body outside the jaws, which contain hair, nails, as well as teeth, sometimes in great numbers, though analogous, are not generally supposed to arise from a similar origin as the so-called dentigerous cysts, or as Sutton demonstrates them, compound follicular odontomes of the jaw. Even maintaining that they are analogous to dermoids of the skin, ovaries, etc., although the analogy between ovarian and other dermoids, and the so-called dentigerous cysts is striking, and one is inclined in some way to connect the genesis of these growths with a common cause, it appears to be the general opinion that the origin is different. Several operations for the removal of odontomes were described by Dr. Gilmer, and several of the masses were exhibited, in hand as well as upon the curtain, the most interesting one perhaps being about one by two-thirds inch in size and presenting great numbers of very diminutive but perfectly formed teeth, united heterogeneously by a cement-like substance.

**Necrology.**

The Committee on Necrology, through Jonathan Taft, Chairman, made a very comprehensive report covering the lives and professional careers of Drs. W. H. Morgan and H. J. McKellops, deceased.

**Clinics.**

In the matter of clinics, that of the filling of canals of teeth which had been set in plaster of paris by as many practitioners, selected from varying locations, and the subsequent exposure of the canals to show results of manipulation, was perhaps the most interesting.

**Next Meeting.**

The contest for the next meeting place was between Boston and Niagara Falls, the latter city being the successful one.

**Election.**

The following officers were elected for the ensuing term: President, Dr. J. A. Libbey, Pittsburg; Vice-President for the East, Dr. S. H. Guilford, Philadelphia; Vice-President for the South, Dr. L. G. Noel, Nashville; Vice-President for the West, Dr. W. P. Dickenson, Minneapolis; Corresponding Secretary, Dr. Josephine D. Pfeifer, Chicago; Recording Secretary, Dr. A. H. Peck, Chicago; Treasurer, Dr. H. M. Morgan, Nashville; Executive Council, Dr. H. J. Burkhart, Batavia, N. Y.; Dr. B. Holly Smith, Baltimore; Dr. J. Y. Crawford, Nashville; Dr. C. C. Crittenden, Madison, Wis.; Dr. M. F. Finley, Washington, D. C.; Executive Committee, Dr. C. S. Butler, Buffalo; Dr. W. N. Cogan, Washington; Dr. G. V. I. Brown, Milwaukee; Committee to Facilitate the Organization of New Societies, Dr. Jonathan Taft, Cincinnati; Dr. H. W. Morgan, Nashville; Dr. Jas. McManus, Hartford.

## **International Dental Federation: First General Meeting, held at Cambridge, Eng., 1901.**

The following address on "Dental Education" was read by Dr. Joseph Griffiths (University Reader in Surgery):

**Dental Education.**

Sir Michael Foster and Gentlemen—I feel this is an occasion for introducing what I am about to say with apologies, because neither am I a dentist, nor indeed do I know, except in very general terms, anything of the education of a dentist. But, as I have been asked to speak upon the subject now under consideration, I beg you will grant me that indulgence which you, tried by meetings and speeches during the last week, must be pretty well

accustomed to exercise, and which I trust you will freely bestow upon me and the matter of my remarks. As, however, I represent the sister art of Surgery in this university, and am engaged in the teaching of the art, as well as the science upon which the art is built up, I may be allowed to have a small say in the matter of the education of the dentist. This subject is not new to me, thanks to Dr. Cunningham, who has on many occasions brought it before me for discussion on the main principles which should guide in the bringing up of the dentist.

Now, I believe I am correct in making the following statement—that the dentists are divided among themselves as to the best means to adopt whereby they themselves can be best educated; and, broadly speaking, they are divided into two sections. To both sections, however, the desire to produce the best dentist is common, and each section naturally thinks it has found the right way. So far as I am able to gather and understand, this difference between the two sections may be expressed in the following manner: One section desires that every dentist shall be trained as a medical man is, and then take up dentistry; whereas the other section desires that a dentist shall be trained to his own profession from first to last. (Before we proceed any further, I think it would be well for me to state that all I am about to say applies to the average, and not to the exceptional dentist.) To emphasize this proposition, let us put it thus: One section desires dentists to be qualified medical men who have, as it were, taken up dentistry as an afterthought, and the other wishes for a dentist from start to finish. According to the former, the man would be given a general medical education, and it can be estimated at nothing more, to base his future practice of dentistry upon; whereas according to the latter he would be given an education upon which his future work directly depends.

Is the education of a dentist to be that of a medical man with dentistry added on, or is it to be designed to meet his own requirements? is the question of the hour.

**Medical Versus  
Dental Education.**

To help in the solution of this interesting problem, a brief comparison between the training of the medical man and of the dentist may not be out of place. In the case of a medical man the first half of his educational career is spent in gaining a complete knowledge of the normal man, and he takes biology, chemistry, and physics as introductory subjects to anatomy and physiology. This is done in order to give him a better understanding of the structure of the body in detail and of the functions of its several organs and tissues. The second half is spent in acquiring all that is known of morbid changes and abnormal functions, and in a training in the physical examination of any and every part of the

human frame. In the earlier half, then, he is trained in methods adopted in the different subjects for eliciting knowledge, and in the second he is directed to employ the methods with which he is already familiar to determine as far as possible the physical condition of any or every part of the body.

On the other hand, in the case of the dentist the first period is spent in acquiring knowledge of the nature and of the mechanical properties of certain materials and in the training to perform accurate work, which must be done, so I understand, to a nicety—a training similar to that of a mechanician. In the second period he is directed to acquire a general knowledge of the structure of the body and of the functions of its several parts; a minute acquaintance with the teeth and the jaws, and of the diseases they are liable to; with the application of the methods, already familiar to him, of dealing with the teeth in their morbid states.

Such I believe to be a fair general statement regarding the training at the present time of a medical man and of a dentist. Let us contrast the requirements of these two. The medical man requires a knowledge of the minute structure and of the functions of the whole body, but the dentist only a knowledge of the minute structure of the teeth and of the jaws, and a general idea of the rest of the human frame. A medical man requires only a general, but sound, idea of mechanical work, but the dentist a thorough knowledge of it, so that he may be able to perform his work with accuracy. A medical man requires a detailed knowledge of all diseased processes and their known causes, but the dentist a particular knowledge of morbid processes as seen in the teeth and jaws, and only a general idea of the morbid processes observed in the remainder of the body. Such a review brings out pretty clearly that the educational career of a medical man does not coincide with that of the dentist, except in a few particulars.

Even in anatomy and physiology, in which their work comes nearest together, the dental student requires that which will give him a sound understanding of the teeth and their connection with, and relation to, the remainder of the body, whereas the medical student should be familiar with the whole body. Of course, the more a dentist knows of the human body or of any other kindred subject the better he will be equipped generally, but not necessarily better furnished for the work of his own profession.

And if we go further and compare the surgeon  
**Dentistry and Surgery.** with the dentist, we shall find that their work differs in a material degree. The dentist must possess many of the qualities that go to make a surgeon; he should have a quick perception, a keen insight, a sensitive touch, and be ever ready to act. But the skill of the dentist is largely, if not entirely, the result of that training in

the mechanical department, so to speak, whereas the skill of the surgeon depends less upon mechanical training than upon accurate judgment to do enough and no more—for in hardly any operation is it necessary for him to make a physicist's measurements and to adhere to them. Mechanical training has indeed been neglected in the education of a surgeon, and hence it is that we often deplore the mechanical knowledge and the reasoning built upon its deficiency as displayed even by surgeons of repute. This has been neglected, I imagine, because that skill born of judgment has been estimated so highly. Now, with the dentist it is just the reverse, for who can conceive a dentist who is ignorant of mechanical work—but one without judgment may perhaps be occasionally met. Thus the surgeon is at one end of the scale and the dentist is at the other, and doubtless it would be a good thing to improve them both, but in contrary directions.

Enough has, I hope, been said to point out that to make a dentist his training should be so arranged as to bring out his fitness for the work before him. A mechanical training of the best kind is essential to him, and must form the basis of his future work. In addition he requires a knowledge of the minute structure and of the function of the teeth, the material upon which he will have to bring his best mechanical skill to bear. I would, therefore, strongly urge you not to imitate the education of a medical student, but to continue on the lines which will train a dentist for his own profession from first to last, and to have a single purpose in view and to endeavor to obtain a definite result. Do not try to make a medical man a dentist, but let a dentist start and finish as such.

Can this education of a dentist be carried on side by side with that of the medical men? is the question of practical importance. I would unhesitatingly answer, No. The anatomist may train either, but he cannot train both together without giving one much more than he requires and not paying enough attention to the other. It is much the same with physiology. Therefore, I say their courses should be separate, and so arranged as to serve the right end. In physics and chemistry the same training might serve; in study of diseases, no.

Is such a course of study proper for a university to undertake? In my humble opinion it is and should be, for the work of the dentist is as honorable and as worthy of respect as that of any of the older professions, and I trust that the newer universities will take this line and have an avenue for dental students to obtain a university degree side by side with the medical student. But I also trust the authorities will let dentistry and medicine be free to develop along those lines which each finds best suited for its own progress.

Although dentistry was once an intimate part of the medical art, it can hardly be so again, for its evolution has been so complete that it now



forms a distinct and separate division of the art of healing. It is, I venture to think, a child of the old stock destined to continue an independent existence and to work out its own salvation.

### Discussion.

At the conclusion of the address, and before the opening of the discussion, Mr. W. B. Patterson, the honorary secretary of the British Dental Association, entered the room, and was heartily welcomed by Sir Michael Foster.

Dr. Brophy, Chicago, said that years ago he held **Dr. Trueman W. Brophy.** views quite contrary to those he held today, but in the light of advancing education and the development of dentistry he had been forced to accept ideas that were formerly not agreeable to him. In the United States dentistry had its birth as a separate and distinct school of training; it was not from choice, but because the medical profession refused to give dentistry a place in their curriculum. At that time it was regretted, because it was wished that dentistry should be a part of the parent medical profession. But, independent schools having been founded, such branches of medicine were taught as the founders felt were necessary. The schools had now added, from time to time, departments until one who was not acquainted with all the medical curriculum might readily be led to believe that they were schools of medicine. It was recognized that in Europe the conditions were quite different from those in America. It was felt that it was impossible to make changes in this country, and in many instances it was quite impossible to make changes in America. The question, therefore, was how to prepare a man to do his work. He had the pleasure of sitting by the side of Sir Michael Foster at luncheon, and he put to him the question. He had a boy nineteen years of age just ready to enter the university; should he be prepared by a long four years' course in the university and then entered at the school of medicine for another four years' course or not? The answer was, "I would prepare him for his life's work. A student of medicine should devote his attention to the study of physics and chemistry and languages." Had he learned nothing more in his trip to Europe, he would have been fully compensated by that answer. He quite agreed with every word contained in the paper. The man who started out in life to prepare himself for any particular calling must have in mind that calling from the beginning to the end.

Dr. Sims Woodhead (professor of pathology, **Dr. Sims Woodhead.** Cambridge) said that every man preparing for his life's work underwent a certain amount of general training, a training to fit him for the specific work he had to undertake

later; and he could not help thinking that perhaps the preliminary years of the dental student and medical student might at any rate run on certain parallel lines. An attempt was made, how far successfully it was difficult to say, in the subject he had to deal with to give the medical student, as soon as he came from his study of anatomy and physiology, some inkling of the general processes of disease. The student specialized in the direction of special pathology, diseases of the nervous system, diseases of the kidney, and so on; but before he took this up it was absolutely necessary he should have a good solid foundation of the general processes of disease. That being the case, he could not help thinking it might be somewhat dangerous to begin to specialize at too early a stage, and whether it would not be better to study at any rate the general physiological and pathological processes, in order that in studying the disease of the special parts to which attention was to be devoted one might go to the very foundation straight-away. From that point of view, he put in a plea for some common ground in the earlier part of the dentist's professional life. He recognized how much dental surgeons had contributed to the subject of bacteriology. In fact, the earliest experiments in bacteriology were carried out on material taken from the teeth. He quite agreed with dentists specializing in the later stages of their course and not attempting to be medical men or surgeons, because they wished to treat a patient for special diseases of special organs, and it was their duty to know far more about those than any medical man or surgeon possibly could know. Dentists were experts, and therefore required an expert training. Even the surgeon found it necessary to specialize, and anything outside his own work he handed over to a colleague. In that light he hoped no attempt would be made to make the dental qualification a medical qualification, but that it would be made something far better for the purpose than any medical or surgical qualification. The dental surgeon was a man specializing in a certain direction, who had built up his profession on a good, sound foundation of general physiological and pathological knowledge.

Professor Hessé, Leipzig, considered that the  
**Prof. Hesse.** preparation for the dental profession was so different in different countries that it was almost impossible to fix a rule or a standard for the preparation in all countries. It was necessary to be guided by the point in view, namely, the development of the art or profession which it was intended to practice, and the training should be such as was best fitted to secure that end.

Dr. Aguilar, Madrid, said he was deeply interested in the proceedings of the Federation, because  
**Dr. Aguilar.** he was the first to feel the necessity of such deliberations. It was only a few months ago that in Spain the law for establish-

ing a dental department in the University of Madrid was passed. Prior to that there was no dental teaching, except what was given privately. He had the honor of being appointed to the chair of dentology in the University of Madrid, and when he was called upon to propose the curriculum of studies he felt the necessity of learning the opinion of learned men—and that opinion could not be better gained than through the Federation now assembled in Cambridge. He felt himself fully compensated and over-compensated for the trouble of attending the meeting. He had no authority to express an opinion of his own, and he would only place in the hands of the chairman the following proposition:

"That five members be appointed to propose resolutions on the following questions and report at the next meeting:

"(1) What preliminary studies should be required for the admittance of students into the dental colleges?

"(2) What are the technical, theoretical and manual studies the student should pass through before being allowed to practice dentistry?

"(3) What part of the studies taught in the medical colleges should be followed by dental students?

"(4) What are the most reasonable titles to be applied to the persons who practice the therapeutic and prosthetic treatment of the diseases of the teeth and mouth?"

On the motion of Dr. George Cunningham, seconded by Dr. Brophy, the resolutions were referred to the Committee of Education, with full power to act.

**Dr. E. C. Kirk.** It was said some years ago by a gentleman who resided not so many miles from this spot that the "evil that men do lives after them; the good is oft interred with their bones." But in what has taken place at this conference it seems to me we have at least one instance where the reverse of that proposition is true. If I have been able to correctly interpret the *motif* of the eloquent and scholarly address by Sir Michael Foster, to which we all listened with such deep interest, I feel that I do him no injustice when I recognize in it the practical application of the principles set forth by Mr. Herbert Spencer in his epoch-making essay on Education; or when I further recognize in it the spirit which animated the lifework of that man who, more than all others, I regard as the Nestor of dental education in England, Sir John Tomes.

I was told before I left America, and even since my arrival in England, that it would be quite useless to expect that anything which might be done as a result of the conferences of the Federation would have any effect in modifying existing views on the subject of dental education in Great Britain; and yet here in England there has been given out by one of

her recognized educational authorities, and from one of her greatest universities, a statement of the principles of dental professional education the most liberal, logical and reasonable which, in my judgment, has yet been uttered anywhere.

Like Mr. Spencer, Sir Michael Foster in his address recognizes the utilitarian character of professional knowledge and the inevitable conclusion therefrom, that education should, from the beginning, be adapted to the uses which the knowledge thereby attained is intended to subserve. He has, by keeping that central idea in view, cut the Gordian knot which for years has confused our discussions and thought on the relationship of dentistry to medicine. His statement that the dentist, within the limits of his activities, is a "healer" places the dental practitioner upon the basis of a natural classification much more readily understandable than when he is regarded, either positively or negatively, as a medical specialist, for, lacking as we do an adequate definition of medicine, it is not yet possible to decide whether a dentist is a medical specialist or not.

The enthusiasm and unanimity of appreciation with which the address of Sir Michael Foster has been received clearly indicate the general acceptance which this representative international gathering has accorded to the views he has expressed. So evidently is that the case that it seems to me the further deliberations of this body may be most profitably confined to a study of the dental curriculum; or, in other words, to securing an arrangement of professional study in conformity with the principles set forth in the address, best suited to the education of the dentist. The best attainable curriculum is yet to be devised; the very fact that such marked differences are to be found in the curricula of dental colleges throughout the world is self-evident proof of the need for further investigation of the best methods for making dentists. It would simplify the question greatly if we should arrange all of the subjects now taught in all dental colleges into two categories: First, those which are essential, and, second, those which, though not essential, are desirable in the education of the dentist. We would then be in position, after having formulated a minimum essential curriculum, to provide for its continued expansion and improvement by the gradual inclusion of members of the category of desirables into that of the essentials.

Reference has been made to the importance of

**Manual Training.** manual training as a feature of the dental curriculum, in order that there may be given to the student that high degree of manipulative dexterity without which he is unable to achieve success as a dental operator. We all admit the importance of manual training in dental education, but not all dental educators have clearly recognized an equally important consideration in that connection,

namely, the stage of development at which manual training should be undertaken by the student. I am not a physiologist, and I am glad to be in position to submit to the judgment of the distinguished physiologist, as well as educator, who is our presiding officer today whether it is not true that in order to successfully train the hand to a high degree of dexterity the manual education must be undertaken early in life, for a period quickly arrives in later years where such training becomes impossible. It was that fact which was clearly recognized by Sir John Tomes, and which he so energetically and practically advocated in his efforts at dental educational reform in this country.

We have frequent and familiar examples of an analogous state of affairs in connection with the use of the bicycle. It is quite possible for an individual after attaining adult years to learn to ride the wheel, but the later it is put off the more certainly does the unfortunate rider develop that anxious expression of countenance which in America we call the "bicycle face." The learner may in time know how to propel his machine, but in so doing he acquires infinitely more knowledge about every feature of the topography of the roadbed over which he travels, and never acquires that freedom and abandon begotten of the automatic muscular co-ordination with which the street urchin of a dozen years controls his machine. It is the necessity for manual training for the dental student in an early period of his career, when his muscular and nervous receptivities are at their maximum, that we find, in my judgment, the strongest argument in favor of a special curriculum for the dental student, and a sufficient reason why his special education should not be deferred until after he has pursued a standard course of medical training.

Prof. Griffiths has referred to the importance of including the study of bacteriology in the dental curriculum. I know of no better illustration of the practical utility of a knowledge of bacteriology to the operative dentist than that embodied in the statement recently made by Dr. Black, of Chicago, in which he said, with reference to the preparation of cavities in teeth preparatory to inserting fillings, that "the margins of all cavities should be laid down upon areas of tooth structure which are relatively immune to the attacks of the bacteria which cause dental caries, in order to prevent a recurrence of the disease."

If that axiom be true, and I think that no one can successfully question its accuracy, the evident conclusion must be that no man can intelligently and successfully prepare a carious cavity in a tooth for filling except he be fortified by a fair knowledge of bacteriology. I feel that we may congratulate ourselves as dental teachers and practitioners upon our good fortune in securing the encouraging and far-sighted statement of

dental educational principles embodied in the able address of our distinguished chairman and of those who have followed him.

Sir Michael Foster said, in answer to Dr. Kirk's inquiry, that for many years past he had urged that the education of the surgeon should not be delayed too long, because it was impossible after certain years to acquire that suppleness and dexterity of touch which was necessary for success. The mind grew old very slowly, and could be educated even late in life; but the body became old very soon, and it was necessary to train it while it was really young.

Dr. Rosenthal, Brussels, said that the evident conclusion of this conference was that nearly every one was of the same opinion, and he thought that Sir Michael Foster had said that morning nearly all that could be said on the matter. He proposed that Sir Michael's speech should be translated into all languages and sent to all the bodies in the world interested in the matter. In Belgium there was a movement toward putting dental education into the hands of the medical man, but the basis upon which such a resolution was taken was a monetary basis. The medical profession was so overcrowded that they thought specialization in dentistry would prove remunerative and relieve the overcrowding of their profession.

Sir James Crichton Browne was glad to have the opportunity of paying his tribute of admiration to the excellent address delivered that morning—an address instinct with wit and wisdom, adorned by epigrams and similes, which would not be easily forgotten. Sir Michael Foster referred to the early training of the dentist at the bench, and the subject had been further emphasized by the excellent observations of Dr. Kirk. Speaking from his own point of view, he attached great value and importance to the manual education of the dentist, and was inclined to attribute to that education a utility and significance that are not perhaps always generally recognized. Every surgeon knew that the movements of the hand were initiated in a certain group of centers of the middle region of the brain—motor centers of the brain. But they were motor centers only in a special sense. They were not motor simply in the sense of sending forth impulses in response to excitations from without; they were motor in the sense of being the springs of movement, and they were receptacles in which was chronicled all the knowledge which the muscular operations put the man in possession of. The muscles not only obeyed the commands of the will, but they added infinitely to the information and intellectual acquisitions. The

most cursory analysis of ideas revealed the fact that there were very few of them which were known purely by sensory impressions. The motor centers of the brain took an enormous share in mental life, and mental manifestations would be as impossible without them as would be the circulation of the blood without one ventricle of the heart. The highest possible functional activity of the motor centers was as important with a view to mental power as to muscular expertness, and the motor centers for the hand were very prominent among the motor centers of the brain. They were related to an organ which in its enormous combination of movements largely added to our intellectual resources, and it was evident that the highest possible functions of activity of those centers was of value in adding to intellectual grasp as well as adding to the expertness of the hand and to business success. But in order to have the highest possible functional activity of those centers it was necessary to have them trained betimes, and therefore it was necessary to give the student his manual training in dexterity very early in life; and by doing that one was not merely training the hand, but was helping to expand and develop the intellect.

Dr. George Cunningham thought the members **Dr. Geo. Cunningham.** would appreciate the results of the first general assembly in connection with the Federation, and he thought the discussion on education was a record which would be hard to beat. The Council had been authorized to appoint a Committee on Education, and he proposed, as a tribute to the success that had been met with that day, that the members should do something to promote the practical education of the public in dentistry. He proposed the appointment of a Committee on State Dental Service. It had been said at a meeting of the representative Board of the British Dental Association by a veteran whom he admired and respected for his past work, that he did not know what state dentistry was, and that he hated the word. State dentistry meant the utilization of the dentist's services by the state. The question of dentistry in the army never was settled. A war in Cuba was necessary to produce what was recommended before the war—dentists for the army of the United States. Before the Boer war began there were dentists who as patriots thought their best place and their greatest assistance was in utilizing their services for the state, but their services were rejected. Four dentists had been sent out to the front to look after nearly a quarter of million men—very capable dentists, but without much experience. What were those few among so many? Their services would be lost, and the danger would occur that instead of giving the men the benefits of conservative dentistry there would be a greater utilization of the forceps,

which to some had ceased to be a dental instrument at all. He would not be content with the dental services accorded to the army at the present moment by the War Department as long as the dentists were made servitors—unless there was a superior mind of a dental character to guide the work. He therefore proposed the formation of a committee to take up the subject.

The proposition was seconded by Dr. Godon.

Dr. J. Leon Williams thought the greatest work which the Federation could do was not so much to educate the dentists as to educate the public. He therefore asked the Federation to keep in view two things—first, the harmonizing of dental teaching, which meant to keep in very close touch with the most advanced scientific investigation. There must be always a divergence of opinion of all arts—that was one of the conditions of progress—but he felt there might be much more harmony in the application of scientific principles. A patient might go to one dentist who recommended a certain method of procedure, but if that patient went to another country, or to some one else for the same thing, a totally different course was recommended. In the advanced stage of scientific dentistry that was not necessary, and therefore he thought a part of the work of the Federation should be keeping in the closest possible touch with the great scientific questions and the harmonizing of their views. Perhaps even more important than that was an attempt to reach the public in some way. There had been a great international congress held in London on tuberculosis, and there was hardly an opinion held by advanced authority on that subject which had not been expressed. Medicine and surgery were in very much closer touch with the public than dentistry, and that closeness of touch was brought about very largely through the daily press—a thing which dentistry as a profession had almost neglected. There was a most woful amount of ignorance on the part of the public as to the possibilities of modern dentistry, and that was because the public was not in close touch with the dental profession and because the dental profession had not done its duty in educating the public in modern dentistry.

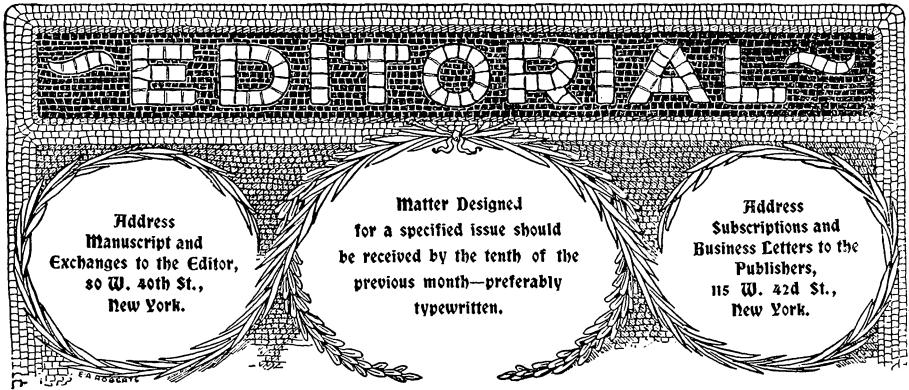
Dr. Förberg, Stockholm, as the hour was late, proposed that the subject should be discussed at the meeting to be held next year in Stockholm. He said he had taken the opportunity to give the general secretary the invitation for the Federation to meet in Stockholm, and he was also authorized to extend the invitation to the Executive Committee of the American Dental Society and the dental societies of Europe. Stockholm would do its best



to welcome the Federation, but after the grand reception it had received in Cambridge he was afraid the best would be exceedingly difficult.

Sir Michael Foster said the proposition of Dr. Förberg would be considered by the Council.





## **The Patent Bill in Congress.**

Our readers are all familiar with the text of the bill which the dental profession desire to see passed by Congress, so that in the future the profession may not be harassed by such companies as the Vulcanite Rubber Company and the International Tooth Crown Company, composed of men who acquire so-called process patents and endeavor to exact royalties from practitioners for various operations upon the mouth, such as all legally qualified dentists should be free to perform in the interests of their patients, and, in effect, in the interest of the public health.

In spite of several efforts to fully explain the dentists' contention, however, there are still many who do not fully understand our aim, and who fail to discriminate between legitimate patents, which, in operation have proven the very cornerstone of our scientific progress, and such patents as we consider illegitimate and which in the past have, we think, been wrongly and wrongfully granted, to the detriment of all concerned save perhaps the very limited few who have selfishly endeavored to prey upon the rest of their fellows.

As the bill will be energetically pushed in the present Congress it seems well to publish the argument of counsel in behalf of the bill, from which it is made manifest that the dentists are asking nothing that is not reasonable, just and, as they believe, in accordance with the intent of the patent law as originally framed.

### Abstract of Argument of Counsel for the Bill.

The bill aims to make two classes of patents unlawful, namely:

*First*—Patents for methods, or processes, or arts of curing human diseases, ailments and disabilities, and,

*Secondly*—Patents upon *devices* and *methods of making* devices intended for use in curing disease or as substitutes for the lost parts of the body, unless such devices are of such a nature that they can be put *upon the market complete, ready for use or attachment*.

As to the first class, the methods or processes or arts (these terms being synonymous in patent law), therein included are only such as are to be practiced *directly upon the body of the patient*, such, for instance, as methods of administering medicines, methods of removing limbs, teeth, etc., etc.; methods of massage, processes of preventing decay of teeth and other parts of the body—in short, all methods of directly treating human ailments.

It is open to doubt whether methods of this sort are patentable under the present law, since the present law contemplates protecting only methods relating to the “useful” or mechanical arts. This question, however, has not been directly brought up in the courts so far as is known, and is therefore still unsettled. So far as the *Patent Office* is concerned, the practice has been to grant such patents, as witness the following digest of patents granted in the dental arts:

Dated May 22, 1883. C. M. Richmond. This  
**Patent No. 277,943.** covers a method of cutting grooves on opposite sides of a living tooth and then removing the natural crown with incising forceps. The pulp is then to be removed by driving a sharpened orange wood stick into the pulp canal, which is later filled with a similar orange-wood stick.

Dated May 22, 1883. C. M. Richmond. This  
**Patent No. 277,935.** covers a method of freezing a tooth by ether spray when a living pulp is to be removed, the tooth being isolated from its fellows by the rubber dam.

Dated December 29, 1896. M. W. Hollings-  
**Patent No. 57,033:** worth. Part of this claim reads as follows: “I claim the hereinbefore described method of bleaching teeth, which consists in applying to a tooth in the mouth a holder for bleaching liquid, exhausting air from holder, and causing a current of electricity to pass through the tooth, substantially as sent forth.”

Dated December 20, 1887, and patent No. 454,-  
**Patent No. 375,167.** 566, dated June 23, 1891, granted to C. H. Land, covering methods of filling teeth with porcelain.

Dated April 2, 1889. D. C. McNaughton. Covers  
**Patent No. 400,535.** a method of filling teeth sensitive at the neck or slightly decayed, by placing a band of metal having cement between it and the tooth.

Dated April 30, 1889. Albert Robinson. Covers  
**Patent No. 402,352.** a method of swaging gold to fit the cavity, filling same with melted metal and cementing such filling into the cavity.

Dated June 4, 1889. Elbert C. Taylor. Covers  
**Patent No. 404,745.** a method of filling teeth by electroplating the cavity, inserting a plug in the cavity and filling the space by electro-deposition.

Dated December 9, 1873. Charles E. Blake.  
**Patent No. 145,275.** Covers a method of filling teeth with gold so as to have a platinum surface. The gold filling is placed first, then a piece of platinum, having one side coated with pure gold, is added to the filling, the gold surface of the platinum cohering with the gold in the tooth.

Dated February 17, 1891. J. W. Clowes. Covers  
**Patent No. 446,769.** a method of filling cavities in adjacent teeth with plastic materials extending from one tooth to the other across the space.

Dated May 2, 1871. Charles H. Mack. Covers  
**Patent No. 114,454.** a method of screwing screws into teeth for securing fillings.

Dated January 15, 1895. Jas. W. Dennis. A  
**Patent No. 532,725.** method of filling teeth by coating the walls of the cavity with oxy-phosphate or some varnish, and sprinkling over this a finely comminuted copper; then more oxy-phosphate in which perhaps there is a supply of the copper dust and toward the surface amalgam and sometimes gold.

Dated July 24, 1888. Wm. A. Dart. Covers a  
**Patent No. 336,692.** method of filling large approximal cavities by swaging partial cap to restore contour, soldering pins on the inner side and holding same in position with cement.

Whether or not these patents would be set aside if their validity were tested in the courts cannot be stated with certainty in the absence of a direct ruling. One of the patents, that to Richmond, No. 277,943, for a method of removing the pulp from the pulp canal of the living tooth by jamming a stick into it, went up to the Supreme Court (*International Tooth Crown Co. vs. Gaylord*, 140 U. S.) and was set aside for want of *novelty*, the process having been found to be old, but nothing appears in the record to show that the validity was attacked upon the ground that the patent covered matter *not the proper subject* of Letters Patent.

The law as to this sort of patents should therefore be clearly enunciated by positive statutes if it be decided that they be obnoxious. The

burden of testing the present law should not be put upon the medical or dental profession.

That patents of this sort are obnoxious and are useless in promoting the industrial arts is evident. They are obnoxious in that they take away what every physician and surgeon should have, namely, the full, unhampered right to cure disease and relieve human suffering in any manner his judgment may deem expedient, without fear of rendering himself liable for infringement upon some patent. They are useless because they neither encourage the investment of capital in exploiting them, since there is nothing to manufacture and put on the market, nor does their grant afford a *needed* stimulus to inventive minds to produce other inventions of like character, for, as is well known, the real, epoch-making inventions and discoveries relating to the cure of disease are made from motives far above the motives of applicants for patents.

As to the *second class* of patents the bill aims to shut out, they relate to *devices* for curing disease, etc., and those adapted to be *attached* to the body to take the place of some *lost part* thereof where such devices *cannot be manufactured and be put on the market complete*, ready for use or attachment.

It is obvious that this does not affect that large class of devices (medical apparatus, surgical instruments, dental instruments, artificial teeth, medical compounds, etc., etc.) that are sold complete on the market, ready for use, but only those because of the peculiar nature of which the physician or surgeon is compelled to make by his own skill and adapt to the particular exigencies of the case. Examples of the sort of patents this provision would have prevented are indicated by the following digest:

Dated September 18, 1894. G. W. Traphagen.

**Patent No. 525,332.** Covers a method of swaging metal dental plates so as to form a continuous upturned margin.

Dated December 18, 1894. M. P. Boyd. Covers

**Patent No. 531,092.** a method of packing the gum portion of a rubber plate with rubber dissolved in chloroform, before flasking, instead of using strips of rubber afterwards, as is commonly done.

Dated March 27, 1888. C. C. Carrol. Covers

**Patent No. 380,021.** aluminum dentures.

Dated January 31, 1871. Mary Ann Boughton.

**Patent No. 111,427.** Covers a method of forming an air chamber. The chamber piece is placed in the roof of the mouth and fashioned so as to hold by suction, before taking the impression, coming away with the impression and indicating the best position for the chamber.

- Patent No. 474,967.** Dated May 17, 1892. J. Payne. Covers the making of an artificial denture by using a special articulator, invented and patented in another patent by same party.
- Patent No. 315,319.** Dated April 7, 1885. J. K. Morris. Covers a method of burnishing tea-lead over the plaster model and again over the wax plate, so that the vulcanite may be made uniformly thick and having bright surfaces.
- Patent No. 316,656.** Dated April 14, 1885. Philip A. Palmer. Covers a method of placing a band around a tooth which is to be clasped by a clasp of a partial denture.
- Patent No. 318,581.** Dated May 26, 1885. W. W. Sheffield. Covers a method of using what has come to be known as a "saddle" in bridgework.
- Patent No. 456,626.** Dated July 28, 1891. Henry Marshall. Covers a method of securing a lower plate. A gold crown is placed on a natural root, and the plate has a hole in it carrying a band which telescopes over the crowned tooth.
- Patent No. 565,076.** Dated December 15, 1891. M. R. Griswold. Method of flasking a vulcanite plate in flask having three rings, so that the red and pink rubber may be packed from opposite sides.
- Patent No. 514,201.** Dated February 6, 1894. Lucius Robertson. Covers method of constructing hard rubber plate, having buccal ridges of soft rubber.
- Patent No. 200,445.** Dated February 19, 1878. Fahnestock and Powell. Covers method of constructing all porcelain denture.
- Patent No. 770,566.** Dated January 9, 1883. John B. Graves. Method of making a metal plate in three sections.
- Patent No. 343,967.** Dated June 15, 1896. Albert Robinson. Covers method of vulcanizing rubber plates with sponge gold at the palatal aspect.
- Patent No. 323,306.** Dated July 28, 1885. Warren R. Evans. Covers method of constructing vulcanite plate having a perforated gold plate imbedded in the rubber. There could be no objection to a patent on the perforated gold plate, which might be manufactured and supplied to the dentists, but the patent covers the method of using this plate.
- Patent No. 382,589.** Dated May 8, 1888. P. L. Malone. Covers a method of constructing horseshoe vulcanite plates. The model is marked where the plate should terminate, and along this line little holes are bored into the plaster model. As a result, the vulcanite is taken out, having a series of wart-like projections

which the inventor sagely informs us "will indicate where the plate should be trimmed."

Dated October 16, 1888. Wm. H. Miller. Covers  
**Patent No. 391,062.** a method of constructing the anterior six teeth in accordance with the usual continuous gum method, and then constructing a full rubber denture, using the six front as a single block of teeth.

In addition to the foregoing there have been about 80 or 90 patents granted that would have been barred by the law asked for. In none of them have the patentees anything to offer the practitioner but sets of directions. They have no tools or materials to sell or put on the market for sale, and therefore are required to invest no capital beyond that invested in obtaining the patent.

It is submitted that patents of this sort, like those covered by the first branch of the proposed amendment, are obnoxious in that they interfere with the clear, moral right—in fact, *duty*, of the physician and surgeon to do for his patients with his own hands whatsoever may be required to effect a cure or relieve suffering. This right or duty of the surgeon and physician certainly cannot in this age be disputed, and no statute giving courts the power to enjoin them should be left on the books.

Under present statutes a conscientious dental surgeon must needs employ a patent lawyer to examine the Patent Office records every time he desires to fill or cap a tooth in a new way or make a new form of bridge or plate to ascertain whether he would thereby infringe any patents! The absurdity as well as the injustice of this is especially apparent when it is remembered that the manner of constructing dentures must be constantly varied to adapt them to the requirements of each particular patient.

That patents for articles that do not call for the investment of capital to exploit them are useless in developing the industrial arts it is thought is evident. The only justification for the patent system is that experience has shown that capitalists will invest in perfecting a new appliance and in creating a want for the same only where assurance is given them that they will have the monopoly thereof for at least a limited time, thus recognizing the fact that it is essentially the *investment of capital* that the patent system is designed to bring about. So far as the sort of inventions we are considering is concerned a patent law is not needed to encourage investors to exploit them, as they do not require the investment of capital for their exploitation; in other words, there would be nothing to justify the practice of granting private monopolies if the inventions covered by the proposed amendment were the only sort to be protected.

It is true that the patent system has a twofold function—it not only encourages the investment of capital, but also stimulates further inven-

tion. But the granting of patents is not needed to stimulate inventions of this sort in the dental arts. The reasons for this make themselves plain upon a little thought. Inventions of this sort are mostly made in the regular course of the practice of the profession and because of the constantly varying necessities of the patients—in short, these inventions are mostly the product of the actual necessity of overcoming obstacles constantly arising in practice. And those that are not made by actual necessity are usually the product of a commendable desire to win the emoluments and prestige that come from success in the profession, and *not* from a desire to obtain wealth from fellow members of the profession under cover of the patent laws. So strong has this ethical feeling become, with the advance of dental surgery to a place by the side of the other branches of medical science, that it is safe to say that but an *exceedingly small* percentage of the inventions made by regular practitioners are ever patented—in fact, instances are very numerous in all branches of medical science, but particularly in the dental branch, of inventions having been dedicated to the public because of unwillingness on the part of the inventors to take royalties from their professional brethren, and there are also instances where practitioners have taken patents simply to prevent others obtaining patents and harassing the profession. The practice of dental surgery constantly calls for such unusual ingenuity on the part of the practitioner that it is no exaggeration at all to say that every dentist of ability has made from one to a dozen and even more inventions of the sort sought to be prohibited—and that, too, without the faintest idea of obtaining patents. It is the common practice at the meetings of every Dental Society for its members to explain new devices invented in the course of their daily practice to cure some disease or ailment, and the notion of patenting these methods of practice never occurs to the inventors thereof. This free interchange of ideas as to methods of practice and the constant necessity for the use of the inventive faculty puts it beyond doubt that the larger proportion of the patents granted in this line could be invalidated for want of novelty if a sufficiently thorough canvass amongst dental surgeons were made, but the dentists have suffered greatly in the past and should not longer be put to the burden of voiding useless patents. There have been numerous suits in the past against dentists for infringement upon these method patents, and it is believed that in almost every instance the owners of the patents have been worsted.

It is clear, therefore, that the dental science needs no patent law to “stimulate” inventions of the kind in question.



**Number of  
Patents Affected.**

Out of about 650,000 patents granted in all the arts about 1,300 specially pertain to dental surgery, and of this number probably not more than 100 would have been barred by the law now asked for. Truly a trifling number when the number of professional men to be relieved is considered. It is estimated that there are about 3,000 licensed dental surgeons in the United States.

**Precedents  
for the Amendment.**

There are many decisions of the United States courts setting aside patents for abstract schemes of keeping books, doing business, etc., and it is thought that most of the methods in question are of no more benefit to the public than patents of that character, for (1st) they require no plant or factory for their exploitation; (2d) patents on them are not needed as a stimulus to further improvement, and (3d) as a corollary to the foregoing they deprive individuals of natural rights without public benefit.

All the foremost foreign countries find it expedient to exempt certain classes of inventions. Some prohibit patents on medicines, others on food compounds, etc., and it is believed that in many of the foreign countries most, if not all, the patents herein referred to would have been refused or be impossible of enforcement on the ground of public policy.

**Effect of Amendment  
on the Patent System.**

For the reasons heretofore stated no evil can result to the Patent System from the enactment of this measure. It is not believed that the framers of the original patent acts intended giving monopolies upon methods of curing human diseases and disabilities, where those methods must be practiced by the physician or surgeon himself and are required by the immediate needs of the patient, and it is thought, therefore, that the present amendment would but be declaratory of the original intention of the authors. It is to be noted in this connection that the patent laws are entitled acts to promote the "*Useful arts*"—this it is thought must be taken to refer to the industries and not to the professions pertaining to the cure of diseases, etc. And the surgical operations required of dentists and the making of dentures and applying them to the mouth requires skill and anatomical knowledge of a special kind equal to that required of the specialist in medicine and surgery.

Instead of having a detrimental effect on the patent system, it is believed the amendment will have a beneficial effect in that it will prevent the issuance of absurd patents and thereby elevate the patent system in the eyes of the general public as well as a large body of learned and honorable men who have been greatly harassed by it in the past, and have in consequence no admiration for it. A further obvious benefit, and a very

material one to the public, is that it will foster the growth of the high ethical feeling that has already grown so strong as to render all patents that hinder a dentist doing for his patient whatever he can do with his own hands in the treatment of disease, no longer bearable.

The harassment suffered in the past by the dentists from holders of patents of this sort compelled the fraternity to organize some fifteen years ago the *Dental Protective Association*, the sole object of which is to defend its members against patent suits. This association has spent many thousands of dollars in defending its members in suits brought by the International Tooth Crown Company, having offices in New York city. This company brought many suits against individual dentists for employing in their practice the methods covered by certain patents for processes of making various kinds of dentures, and in the only suit that was pressed to a final hearing injunction and accounting were denied and the main patents sued on held invalid for want of novelty and prior use. About fifteen years or so ago the United States courts were glutted with litigation of this sort by the Goodyear Vulcanite Rubber Company, and the expense of defence was entirely borne by the dentists. It is beyond all reason that a fraternity of honorable men should thus unite in defence against such suits did they not *know* that they have a strong *moral* right to resist such patents.

The methods pursued by these patent companies in getting evidence against the dentists has been obnoxious in the extreme, so obviously obnoxious indeed that it alone shows the unrighteousness of their cause. Their method has been simply to employ a set of men having the desired disabilities of the mouth to visit dentists' offices, one after another, and request the dentists to employ a certain method of making and applying some particular crown, bridge or plate, as the case may be, and then when the work was done to bring suit upon the evidence afforded by the spies. This method would be intolerable to the members of the most humble calling; it is positively unbearable to a body of honorable and scientific men engaged in the art of curing human disabilities.

And besides the money subscribed to the Protective Association the patents in question have cost the dentists many more thousands paid in license fees to the patent companies by practitioners loath to be dragged into litigation.





With malice  
toward none,  
with charity  
for all

Questions will be answered in this department, provided the answers would be of general interest. After publication our readers are cordially invited to make further reply, criticism or comment.



In response to the announcement which appears monthly in this department, Dr. J. W. Puckett, of Geneva, Neb., sends a description of the following case and desires an opinion thereon:

**Pulp Sensitive  
After Arsenic.**

He describes a condition where the patient presents, having a tooth in which there is pulp exposure. Dressings are applied to destroy the pulp, different preparations of arsenic being used and left in for periods varying from one or two days to one or two weeks, in spite of which upon examination the pulp is discovered sensitive to the touch. The symptoms point unmistakably to calcification of the pulp. In the presence of pulp stones arsenic, because of the slow absorption, sometimes causes intense agony and is nearly always inert or very slow in producing sufficient destruction to permit of pulp removal. Two good procedures are as follows:

First; apply cocaine cataphoretically, then cut away the calcific material, which usually being possible, you remove the larger pulp stone which blocks the aperture at the point of exposure. Sometimes the

pulp may be removed under cataphoresis, but this is rarely accomplished. A dressing may then be applied of anhydrous crystals of cocaine macerated with oil of cloves and a small quantity of arsenious acid added to the mixture, which should be prepared for each case. The pulp will be readily removed at a subsequent sitting without any intervening pain. Another method, not so satisfactory on account of hemorrhage, but advantageous because of its rapidity, is to give the patient gas and remove the pulp stones, and the pulp if possible, while the patient is under the anæsthetic.

There seems to be an inherent desire in the breast of man to advertise himself, or to be advertised; to see his name in print, and if the name be printed, why not in large type? Men of commerce recognize this failing so well that very often they cater to it, and much good money changes hands as the result of well worded invitations. Even so prominent a publisher as R. L. Polk & Co. who publish Polk's *Dental Register* have at last realized this trait, and endeavor to take advantage of it in a circular recently addressed to the dental profession, which in part reads;

"For subscribers the college data is inserted in detail, also honorary degrees and membership in dental societies. The necessity of condensing the book compels us to restrict the detailed information to PATRONS ONLY. For NON-PATRONS the college is designated by a key number, e. g.:

### Sample Information.

#### For Patrons.

Western College of Dental Surgeons, St. Louis, Mo., 1879; Prof. of Clinical Therapeutics Chicago College of Dental Surgery; Mem. National Dental Assn., Illinois State Dental Society, Chicago Dental Society, etc., ——— Masonic Temple.

#### For Non-Patrons.

Phillips Frank E, 152, 1892, 92 State.  
Piehl Paul A, 155, 1891, 719 Milwaukee av.  
Pilcher Wm E, 154, 1892, 368 Fullerton av.  
Pine Milton B, 152, 1894, 92 State.  
Pinkerton Ross K, 6429 Jefferson av.

"The insertion of your college, class and other attainments in detail in an old-established national publication is of great value, as a dentist in any other city whose patients anticipate moving to your town, would naturally recommend them to a dentist whose qualifications and standing in the community could be ascertained in detail by a simple reference to the Register."

There is no disguising the full object of this proposition, which is clearly pointed out in the final paragraph of the quotation. It is a bid for patronage. Presumably, some would say, however, that it is ethical

advertising, because it reaches only the eyes of dentists. Perhaps we may let it go at that.

Whilst on this subject, it might be pertinent to mention that a well-known dentist has sent us a newspaper clipping, in which appears a column article descriptive of one of our most prominent university dental schools, which really is a first-class puff for that institution, one paragraph reading: "Of the 364 students in attendance, eighty, comprising twenty-two per cent, are foreigners." Then follows a list of countries from all parts of the world, which shows how widely sought is this institution of learning. The dentist treats the subject somewhat humorously as follows. The screed is given with its original spelling:

"Oh, me! Oh, me! Oh, my! Oh, my!  
 Don't Dental ethix get a black eye.  
 Ha, Ha—Haw, Haw—Ho. Ho—He, He!  
 Don't question the tricks of the 'varsitee,  
 We're sticklers for the strictest ethikle rules  
 To be applied to the softies of other schools,  
 But our methods and standards are so celestially higher  
 That we will soon sing in the Heavenly Dental choir,  
 While ethkley not an "advertising joint,"  
 We advertise slyly—don't you see the point?"

Dr. J. B. Williams, of Ashland, Wis., writes as  
**St. Luke's Hospital,** follows concerning "St. Luke's Hospital," of Niles,  
**Niles, Mich.** Mich.: "Perhaps you would like to know more about

A. C. Probert, of Niles, Mich. I will give you a few facts. It would take a large book to tell half his story.

"A few years ago Probert lived in Northern Wisconsin and was president of three State banks, located at Washburn, Shell Lake and Prescott, Wis.; at the same time he was insurance agent, real estate dealer, president of light company, water company, brewery, etc. His banks failed. He was convicted of illegal banking and served two years in the state prison at Waupun. Soon after getting out of Waupun he turned up with M.D. to his name. He told me that he was so well up in the *theory* and *practice* of medicine that the 'college' gave him a degree in two weeks. He soon became connected with Niles Hospital, and he said he was taking in \$250.00 per week for treating people through the mail. These are a few of the many interesting things about him."

Dr. F. H. Essig, Secretary of the Michigan State Dental Association, writes as follows: "I have investigated the matter to some extent and find there is such an institution, and that they are 'fakes' of the first water—a regular diploma mill. I have referred the matter to our State

Society President, asking for his advice. I will assure you I shall endeavor to stamp the thing out if possible. They have a large building, but are not doing any hospital work as near as I can find out. Will investigate at once."

Dr. Frank A. Godsoe, of St. John, N. B., writes to us in reference to the same matter as follows: "In your issue of November, 1901, there appeared an editorial, headed 'A Novelty in Cheap Diplomas,' wherein my name appeared as a member of the dental staff of an institution calling itself 'St. Luke's Hospital,' of Niles, Mich. In justice to myself, and in vindication of the honor of the society of which I am Secretary, I beg to advise you and the dental profession that wherever my name appeared in connection with the above so-called institution it was fraudulently used—in fact, entirely without my consent or knowledge, and I trust the State Dental Society of Michigan will thoroughly investigate the matter."

**Preservation  
of Third Molars.**

Dr. Stewart J. Spence, of Harriman, Tenn., writing on the subject of the preservation of third molars, after commenting on an editorial on the same subject, printed by us last year, says: "I write to suggest-another reason for preserving the *dens sapientae*. This: the third molar gone, the tongue strikes against the lingual posterior corner of the second molar in its forward movements, and is thereby constantly irritated. The irritation is often not enough to attract immediate attention, and therein lies the danger. I had a patient who died of cancer of the tongue brought on, I believe, by this cause. I rounded the angle of the tooth and advised her to consult a physician about that sore spot on the side of her tongue; but she believed she ought to trust the Lord to heal her of all her diseases, and fell a victim to this faith."

**Extensive Use of Gold  
in One Mouth.**

Dr. E. C. W. Sandré, an American dentist practicing in Munich, after stating that he uses an automatic mallet and has a lady assistant, relates that he has just "finished a lady," as they say in Germany, and that he used two ounces and a little more than one-half book of gold in her mouth. He would like to know if the profession in America would consider that exceptional quantity for one mouth.

**Sneak Thief  
in Dental Offices.**

Numerous complaints have reached this office to the effect that a man who calls himself a dentist is visiting dental offices and purloining articles of value. At least a dozen dentists in New York and New Jersey have been thus victimized. One of his aliases is Dr. Wilson. He is a man of medium height, and wears a mustache which is cropped short across the lips, forming a heavy brush. He wears a high collar, which, from its condition, is probably the same collar which he has been wear-

ing for several years without recourse to the laundry. His clothing is in a similarly unclean condition. He calls himself a dentist, and pretends that he is seeking a position as an assistant. He has a pocketful of recommendations, alleged to be from previous employers, which are in a state of dilapidation. One of his schemes, while waiting in the reception room, is to ask the assistant to bring him a glass of water, and when left alone he pockets whatever he may get his hands on. His thefts thus far have amounted in value to from ten to fifty dollars.

**Antikamnia in  
Dentistry.**

J. Ross Hardy, D.D.S., of San Diego, Cal., instructor in crown and bridge work, 1896-1900, Tuft's College Dental School, Boston, Mass., under date of Oct. 21st, 1901, writes of Antikamnia Preparations as follows:

"Although not located in as large a city as formerly, I still have abundant opportunities to use and to recommend the use of Five-Grain antikamnia tablets, which I do in every possible case, for I believe they occupy a place all their own, in the dentist's medicine chest.

"It is my custom to prescribe the tablets in cases of acute pain in the treatment of abscessed teeth, both before and after their extraction. In cases of very severe pain, I prescribe one tablet every half hour until three are taken, and I have always had the best effects to follow their use.

"Of late I have also been using antikamnia and codeine tablets in cases of severe odontalgia, and they have relieved promptly. They were effectual in cases which nothing else would relieve. A crushed antikamnia tablet placed in the socket after extraction and covered with a bit of cotton, eased the pain wonderfully."





### **National Society Meetings.**

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- National Dental Association, Niagara Falls, N. Y., Aug. 5, 6, 7.  
National Association of Dental Examiners, Niagara Falls, N. Y.,  
Aug. 1.  
National Association of Dental Faculties, Niagara Falls, N. Y.,  
July 31.
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### **State Society Meetings.**

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- Colorado State Dental Association, Colorado Springs, June 17, 18, 19.  
Connecticut State Dental Association, Hartford, May 19, 20.  
Delaware State Dental Society, Wilmington, July 2.  
District of Columbia Dental Society, Washington, Dec. 16.  
Florida State Dental Society, Daytona Beach, Daytona, May 28.  
Illinois State Dental Society, Springfield, May 13, 14, 15.  
Indiana State Dental Association, Lake Maxinkuckee, June 24, 25, 26.  
Kansas State Dental Association, Hutchinson, May 13, 14, 15.  
Maine Dental Society, Camden, July 15, 16, 17.  
Maryland State Dental Association, Baltimore, Jan. 30.  
Michigan Dental Association, Grand Rapids, June.  
Minnesota State Dental Association, St. Paul.  
Mississippi Dental Association, Biloxi, May 20, 21, 22.  
Missouri State Dental Association, Jefferson City, May 21, 22, 23.  
Nebraska State Dental Society, Lincoln, May 20.  
New Jersey State Dental Society, Asbury Park, July 16, 17, 18.  
New York State Dental Society, Albany, May 14, 15.  
North Carolina Dental Society, Raleigh, June 19, 20, 21.  
Ohio State Dental Society, Columbus, Dec. 2, 3, 4.  
Pennsylvania State Dental Society, Bedford Springs, July 8, 9, 10.



Rhode Island Dental Society, July 8.  
 Tennessee Dental Association, Monteagle, July 1.  
 Texas State Dental Association, Waco, May 13, 14, 15.  
 Vermont State Dental Society, Rutland, March 19, 20, 21.  
 Wisconsin State Dental Society, Milwaukee, July 15, 16, 17.

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### **Southern Branch National Dental Association.**

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The fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, February 18, 1902. The Association will be in session four days. Atlanta is now the best located and equipped city in the South for holding such a meeting. This fact assures a large attendance. The Southeastern Passenger Association will give a rate of one and one-third fare for the round trip. All members are earnestly requested to be present.

C. L. ALEXANDER,  
 Charlotte, N. C. Cor. Sec'y S. B. N. D. A.

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### **National Association of Dental Examiners.**

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Will the Secretaries of the State Board of Examiners of the different states please send a list of the names of examiners and officers of each Board to the Secretary of the National Association of Dental Examiners?

J. ALLEN OSMUN, Sec'y.  
 588 Broad Street, Newark, N. J.

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### **Central Dental Association of Northern New Jersey.**

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The Central Dental Association of Northern New Jersey invites the dental profession to a meeting to be held at No. 943 Broad street, Newark, N. J., Davis's Parlors, Saturday evening, Jan. 19, 1902, at 8.15 p. m., and hear read a paper by Robert Lincoln Watkins, M.D., of New York, on "Some New and Old Points on the Examination of the Blood."

Incidentally an exhibition, by the use of the micromotoscope, of living bacterial organisms showing motion of animalculi feeding, circulation of the blood, motion of the syphilitic spore, tuberculosis streptococci in pyor-

rhœa alveolaris, organisms in leptothrix racemosa. Differential diagnosis between uric acid, systemic and tubercular rheumatism. Cow blood in apoplexy.

Being an entirely new and novel illustration of unusual interest to the dental and medical profession.

As usual, a banquet will precede the meeting, that will commence at 5.15 sharp, and for those who wish to participate, notification must reach the undersigned by noon of January 17. The price per cover will be \$1.00. The remittance can be enclosed. Trains half-hourly from foot of Liberty, Cortlandt, Barclay, Christopher and Desbrosses streets. Time, 28 minutes.

The annual banquet will be held as usual February 15, same place. As we can only accommodate two hundred, an early notification of intention to come is necessary.

CHARLES A. MEEKER, Sec'y.

29 Fulton Street, Newark, N. J.

### **New York Odontological Society.**

The thirty-fifth anniversary meeting of the New York Odontological Society will be held at the Academy of Medicine, No. 17 West Forty-third Street, New York City, Jan. 21, 1902.

For the afternoon meeting, which will begin at two o'clock, an interesting list of clinics has been arranged and will include the following:

Dr. G. W. Schwartz, of Chicago; Making and Setting Porcelain Bridge.

Dr. George Evans, of New York; Demonstrating the Use of Gutta Percha Cement for the Setting of Crowns and Bridges, and Exhibiting New Instruments and Appliances for its Manipulation.

Dr. Robert Good, of Chicago; Treating Pyorrhœa, and Exhibiting a Case under Treatment.

Dr. Joseph Head, of Philadelphia; Demonstrating New Method of Bleaching and Sterilizing Stained Enamel.

At this session also Dr. Hinkins, of Chicago, will read a paper on "The Further Consideration of the Disintegration of Cements when Used in or Around the Teeth."

The evening meeting will take place in the large auditorium of the Academy of Medicine at eight o'clock.

The paper of the evening will be read by Dr. A. W. Harlan, of Chicago. Subject: "The Basis of Dental Medicine."

W. D. TRACY, Cor. Sec'y.

46 West Thirty-seventh Street, New York.

### **New Jersey State Dental Society.**

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The thirty-second annual meeting of the New Jersey State Dental Society will be held in the Auditorium at Asbury Park, commencing at 10 a. m., Wednesday, July 16, and continuing Thursday and Friday, 17 and 18.

Four good papers will be read, and the clinics and exhibits will, as usual, be extensive and varied as 1901, and make a post-graduate school of modern operative and mechanical dentistry for the busy practitioner who can spare a few days when business is dull. Full particulars later on.

CHARLES A. MEEKER, Sec'y.

HERBERT S. SUTPHEN, Asst. Sec'y.

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### **South Dakota State Board of Dental Examiners.**

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A meeting of the South Dakota State Board of Dental Examiners for the examination of candidates will be held at Madison, S. D., January 8, 1902. All candidates must appear not later than 9 o'clock a. m. of that date at the office of Dr. F. N. Palmer.

Practical demonstration will be required in every case whether applicant holds diploma or not, and it will be necessary to bring complete operating outfit, including filling material and dental engine. Applicants bring patients if convenient.

All temporary permits expire at this time, and parties holding same must appear and obtain permanent licenses if they wish to continue to practice.

G. W. COLLINS, Sec'y.

Vermillion, S. D.

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### **Ohio State Dental Society.**

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At the thirty-sixth annual meeting of the Ohio State Dental Society, held at Columbus December 3, 4, and 5, 1901, the following officers were elected for 1902: President, Otto Arnold, Columbus; First Vice-President, J. B. Beauman, Columbus; Second Vice-President, J. F. Stephan, Cleveland; Secretary, S. D. Ruggles, Portsmouth; Treasurer, C. I. Keely, Hamilton.

S. D. RUGGLES, Sec'y.

Portsmouth, O.

### **Northern Illinois Dental Society.**

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The Northern Illinois Dental Society held its fourteenth annual meeting at Joliet October 16 and 17, 1901, and elected the following officers for the ensuing year: President, C. J. Sowle, Rockford; Vice-President, J. E. Hancock, Joliet; Secretary, J. J. Reed, Rockford; Treasurer, M. R. Harned, Rockford. Member of Executive Committee, C. J. Underwood, Elgin.

Next meeting to be held at Rockford, 1902.

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### **Wisconsin State Dental Society.**

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At the last meeting of the Wisconsin State Dental Society the following officers were elected for the ensuing year: President, E. A. Gatterdam, La Crosse; Vice-President, E. J. Hart, Madison; Secretary, W. H. Mueller, Madison; Treasurer, H. A. Palmer, Janesville.

Madison, Wis.

W. H. MUELLER, Sec'y.

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### **The Fifty-Fifth Annual Meeting of the Pennsylvania Association of Dental Surgeons—Election of Officers.**

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The fifty-fifth annual meeting of the Pennsylvania Association of Dental Surgeons was held October 8, 1901. The following officers were elected for the ensuing year:

President, Dr. Wilbur F. Litch; Vice-President, Dr. Eben C. Flagg; Secretary, Dr. J. Clarence Salvas; Treasurer and Librarian, Dr. Wm. H. Trueman.

The Pennsylvania Association of Dental Surgeons was organized at Philadelphia December 16, 1845, and from that date to the present time has had a continuous existence. Dating back as it does to the early days, the dawn of organized effort for professional advancement, it is a connecting link between the past and the present. The society is one of the very few that have been sustained, and is the oldest dental society in the world. Notwithstanding the fact that the organization of other local societies drew from time to time many of its more active members, it has nevertheless continued to hold during this long period its regular stated

meetings. The past year has been one of marked prosperity. There has been a large increase in membership and the meetings have been well attended and have been made the medium for presenting papers of much practical usefulness to the profession, and hence having permanent value as contributions to current dental literature.

J. CLARENCE SALVAS, Sec'y.

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### **New Jersey State Dental Society.**

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The Committee on Exhibits desires to announce that at the thirty-second annual meeting of the New Jersey State Dental Society to be held, as usual, in the "Auditorium," Asbury Park, July 16th, 17th and 18th, the large room which is especially adapted for exhibition purposes will be devoted exclusively to the exhibits. Every advantage is here offered for a great display; with all the conveniences necessary for such an exhibition.

This will undoubtedly be a "big year," and especially so from the exhibit standpoint, as many exhibitors have already written to secure the space generally selected by them.

A great inducement offered to all exhibitors is the fact that at last year's meeting over five hundred dentists registered at the entrance to the Exhibit Hall.

The names of the exhibitors selecting space prior to the programme going to press will be mentioned therein, together with the nature of their display.

It is earnestly requested that those desiring space communicate with the chairman at an early date.

FRANK L. HINDLE,

Chairman of the Committee on Exhibits.

New Brunswick, N. J.

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### **Wisconsin State Board Dental Examiners.**

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The next meeting of this Board for examination will be held at Hotel Pfister, Milwaukee, January 28, 29 and 30, 1902, commencing at 9 a. m.

All examinations are conducted in the English language and in writing. A practical examination is all required, and all applicants must furnish their own instruments, patient and material.

U. H. CARSON, D.D.S., Sec'y.

Milwaukee, Wis.

### **Odontographic Society.**

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At the annual meeting of the Odontographic Society, held Monday, December 16, 1901, the following officers were elected for the ensuing year: President, C. N. Johnson; Vice-President, W. T. Reeves; Secretary, Frank H. Zinn; Treasurer, Geo. N. West; Board of Directors, Geo. B. Perry, F. E. Roach, L. O. Green; Board of Censors, F. B. Noyes, W. Girling, D. A. Hare; Program Committee, C. E. Bentley, L. S. Tenney, H. J. Goslee. The fifteenth anniversary of the society will occur in December, 1902. It is the intention of the society to celebrate the event by giving a rousing "Clinic," extending over two days, and a meeting that will be memorable in its history. Prominent members from all parts of the country are to be invited to be present. The Program Committee have already commenced plans for one of the most notable meetings that has been held in this country.

FRANK H. ZINN, Sec'y.

100 State street, Chicago.

